

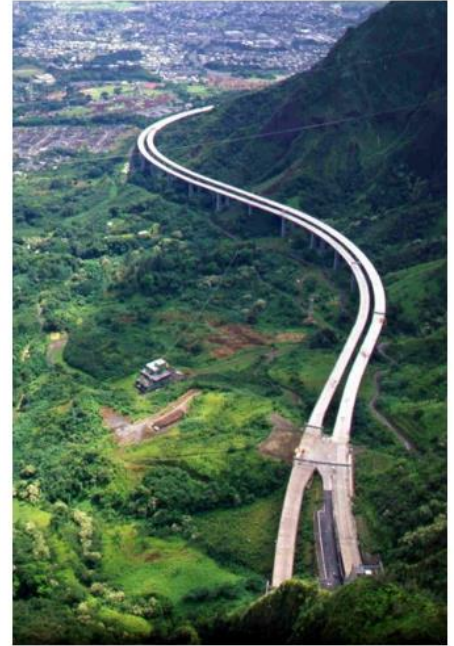


Please click [here](#) to view the 2020 Act100 Report

## Highways Division

The Hawaii Department of Transportation Highways Division oversees the State Highway System. It is comprised of more than **981.2** centerline miles of highways and roads that provide regional movement and link major sites, such as airports, harbors, industrial areas, military installations, major communities, and primary urban centers. By providing this critical network, the Highways system serves Hawaii's communities, land uses and economy. It is critical to supporting commuter and freight travel, and provides mobility for a variety of user needs, abilities, and mode choices such as persons with disabilities, pedestrians, bicyclists, transit, motorists, and commercial vehicles.

The State Highway System provides mobility for over 1.4 million Hawaii residents—including a civilian labor force of approximately 680,000 people—over 8 million visitors, and over 32 million tons of freight each year. Although it accounts for only **22%** of the total centerline miles of highways and roads, the State Highway System carries approximately **56%** of the total **22.42 Million** daily vehicle miles (8.2 Billion annually) traveled in Hawaii. The segments of the State Highway System that experience the highest freight volumes can transport over 20,000 trucks per day. By connecting regions with key locations and carrying high volumes of vehicles and freight, the State Highway System enables the efficient movement of commuters and goods statewide.



## Mission Statement

The mission of the Highways Division is to maximize available resources to provide a safe, efficient, accessible and sustainable State Highway System that ensures the mobility of people and goods, and supports economic vitality and livability. This mission is implemented through the Highways Divisions long range plans, programs, and project development/delivery process.

The long range land transportation plans identify goals, objectives, needs, and priorities aligned with the federal requirements and planning factors identified by the United States Department of Transportation (USDOT).

The following were identified as the highest priority goals:



# Statement of Goals

Click each goal's tile to view specific objectives and policies, action plans for implementing the objectives and information on processes that will be leveraged to measure the performance of each goal.

It is important to note that Highways Leadership takes into account several qualitative considerations when selecting projects including **Ensuring Equity**, **Encouraging Environmental Stewardship** and **Motivating Opportunities**.

## Improve Safety

Read More About Safety Goals | 2021



[Read More](#)

## Foster System Preservation

Read More About System Preservation Goals | 2021



[Read More](#)

## Improve System Efficiency

Read More About System Efficiency Goals | 2021



[Read More](#)

## Multi-Modal Integration

Read More About Multi-Modal Integration Goals | 2021



[Read More](#)

## Encourage Economic Vitality

Read More About Economic Vitality Goals | 2021



[Read More](#)

## Improve Resiliency

Read More About Resiliency Goals | 2021



[Read More](#)

# Federal Highway Administration Goals for HDOT

The metrics listed below provide a real-time look at how the Highways Division is performing against the goals that the Federal Highway Administration (FHWA) has laid out for the fiscal year in review.

## Goal 1: Reduce Federal Pipeline to \$340 Million

### What is the Federal Pipeline?

The federal pipeline is the amount of federal aid money in the various highways projects.

### Why is tracking the Federal Pipeline Important?

Tracking the federal pipeline is important because it helps to ensure that projects (fed aid monies) keep moving through the project delivery process. Effective utilization of federal aid money provides needed improvements to the highway system. It also allows the state to request additional federal funds.

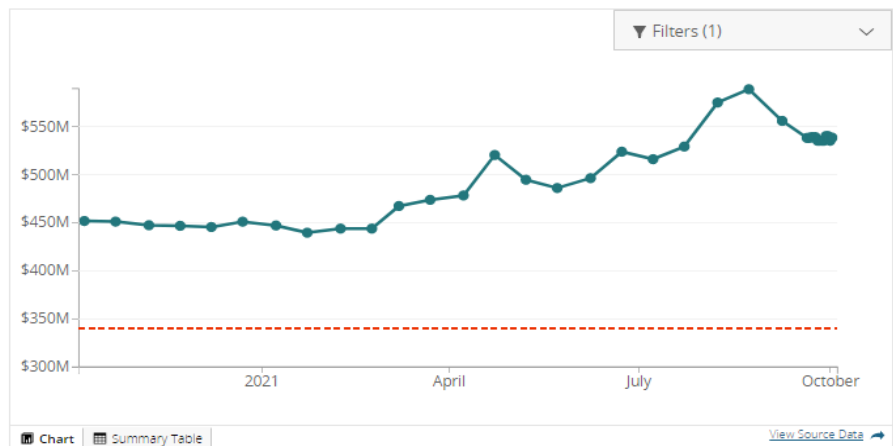
### Measuring HDOT Highways Performance

The chart to the right displays the HDOT Highways Pipeline over the course of the Federal Fiscal Year 2021.

The organization uses a data-centric approach in tracking the status of the Federal Pipeline by extracting information nightly directly from FMIS and routinely meeting on developing strategies to reduce the pipeline.

In FFY 2021, the Highways Administrator launched an effort to enhance the information shown on the Pipeline Dashboard to enhance the dashboard's utility to the organization.

**2021 Target: \$340M**

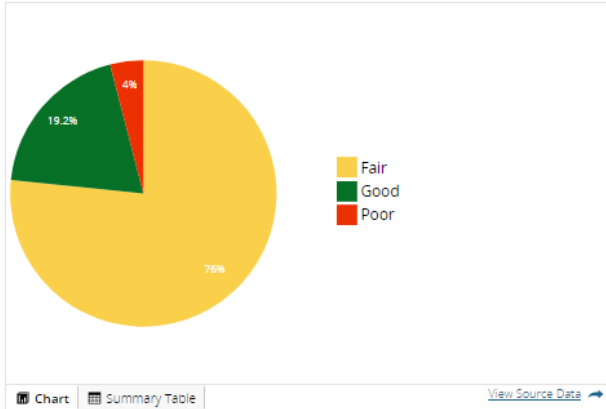


## Goal 2: Pavement

### Percentage of Interstate System by Condition

4 Year Targets - **Good** Condition: 7% | **Poor** Condition: 4%

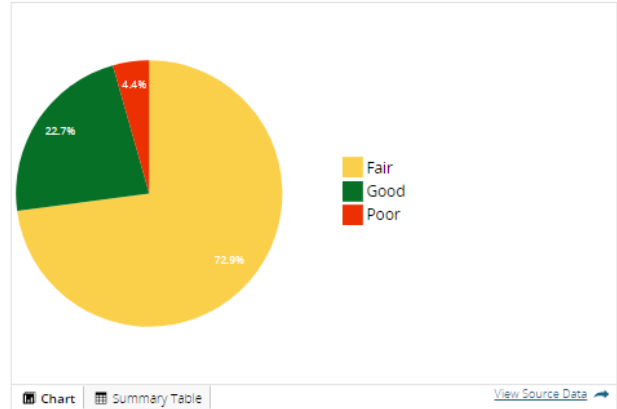
Note: the percentages in the pie chart below are using the most recently available, **unofficial**, data. Once updated official data becomes available, the chart will be updated.



### Percentage of Non Interstate NHS by Condition

4 Year Targets - **Good** Condition: 15% | **Poor** Condition: 4%

Note: the percentages in the pie chart below are using the most recently available, **unofficial**, data. Once updated official data becomes available, the chart will be updated.



**NOTE:** For more information on how the metrics for Pavement are is determined, [click here](#).

## Goal 3: Bridges

### Percentage of NHS Bridges by Condition

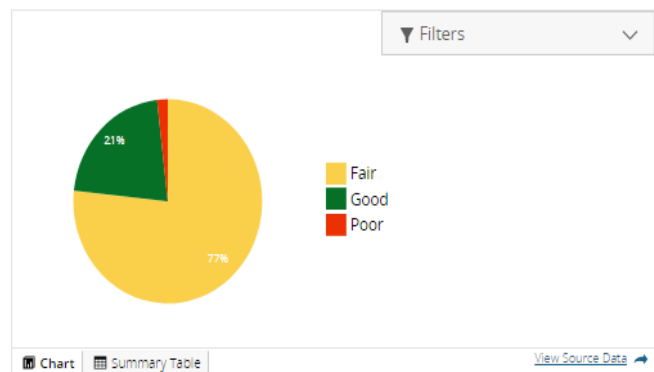
The pie chart to the right shows the percentage of bridge deck area that are classified as **Good** / **Fair** / **Poor**.

4-Year Targets -

**Good** Condition: 20%

**Poor** Condition: 2%

**NOTE:** For more information on how bridge condition is determined, [click here](#).



## Goal 4: Reliability



### What Is Travel Time Reliability?

[As defined by](#) the Federal Highway Administration (FHWA), Travel Time Reliability measures the extent of the unexpected delay in travel time. A formal definition for travel time reliability is: the consistency or dependability in travel times, as measured from day-to-day and/or across different times of the day.

At HDOT, while we are focused on improving travel time reliability for Hawaii drivers, we are also always delivering projects that combat congestion. The way we see it, it is not good enough to have reliably long travel times but our end goal is to have reliable fast travel times. Our page dedicated to System Efficiency can help outline all of the past, future and present projects that will help us get to the goal of reliable, fast travel times.



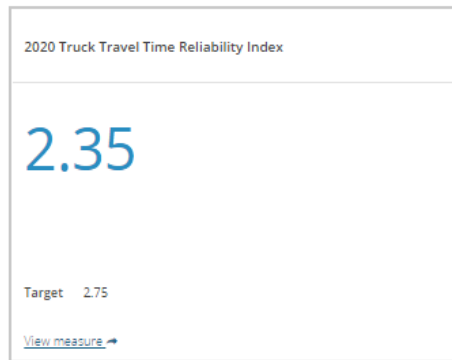
### Why is Travel Time Reliability Important?

Personal and business travelers value reliability because it allows them to make better use of their own time.

[Click here](#) to read more about how these measures are calculated.

While the metrics to the left are calculating using the most recent official HPMS data, HDOT can also leverage unofficial travel time reliability data for the current calendar year to inform their decision making. [Click here](#) to view a map of 2020 Travel Time Reliability.

## Goal 5: Freight



### What Is Truck Travel Time Reliability?

This metric is intended to measure how consistent or dependable travel times are for freight vehicles.

A lower TTTR indicates that there is a lower level of travel time variability (i.e., more reliable travel times).

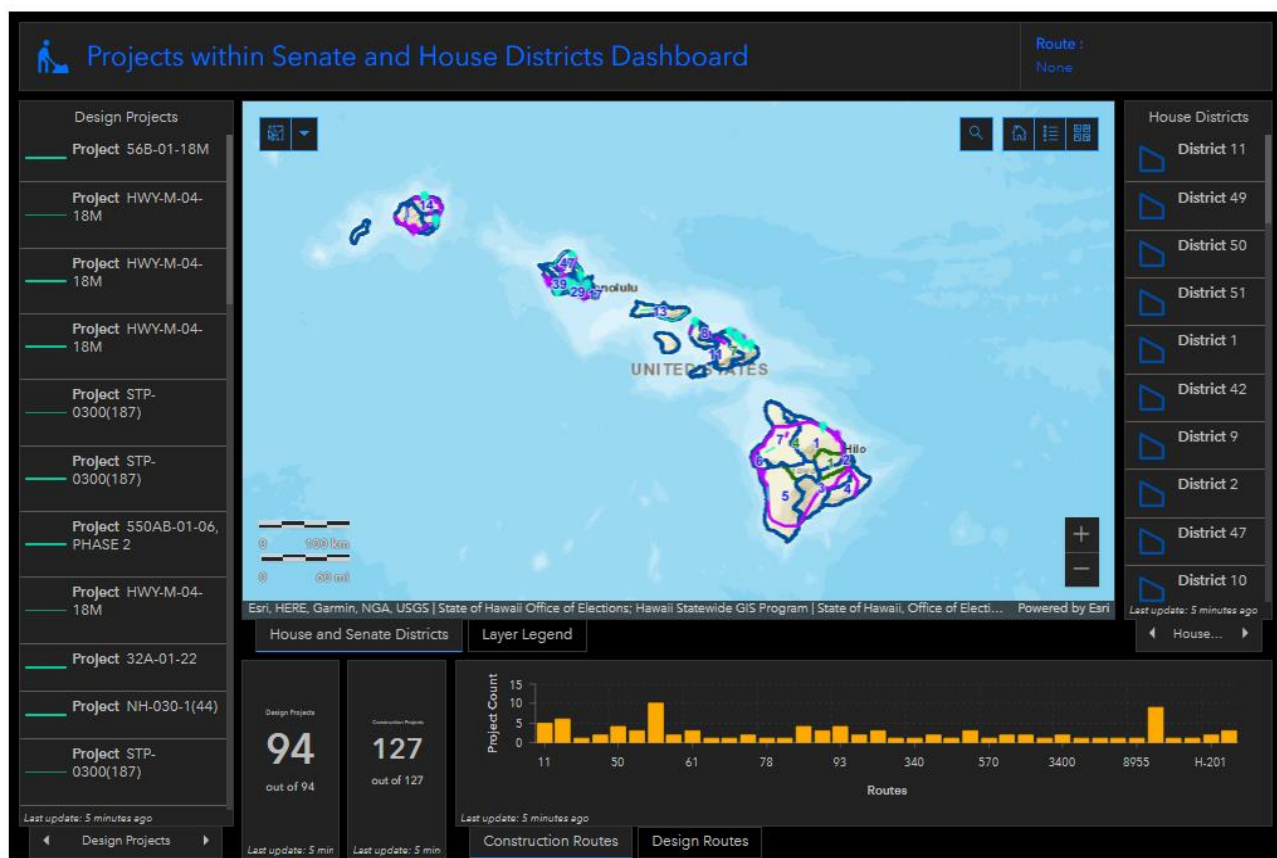
### Why is this measure important?

Shippers and Freight Carriers require predictable travel times to optimize resource planning, deliver on contracts and remain competitive in the marketplace.

[Click here](#) to read more about how this measure is calculated.

## Projects Within Senate and House Districts

The dashboard below displays active Design and Construction projects in each of the State's Senate and House districts. It is important to note that a project can span multiple districts.





# Highways Division Accomplishments Calendar Year 2021

The information listed below describes areas in which Highways directly played an integral role in supporting significant accomplishments throughout the State of Hawaii in CY 2021.

## Highways Division Statistics

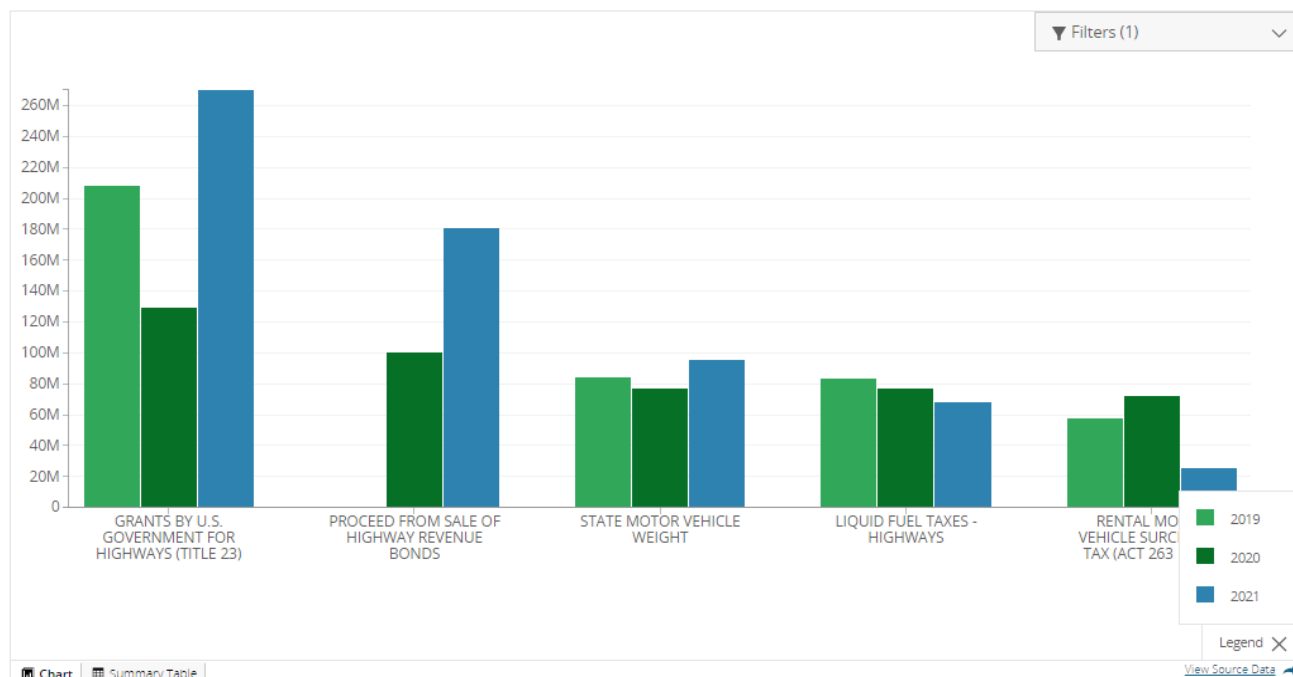
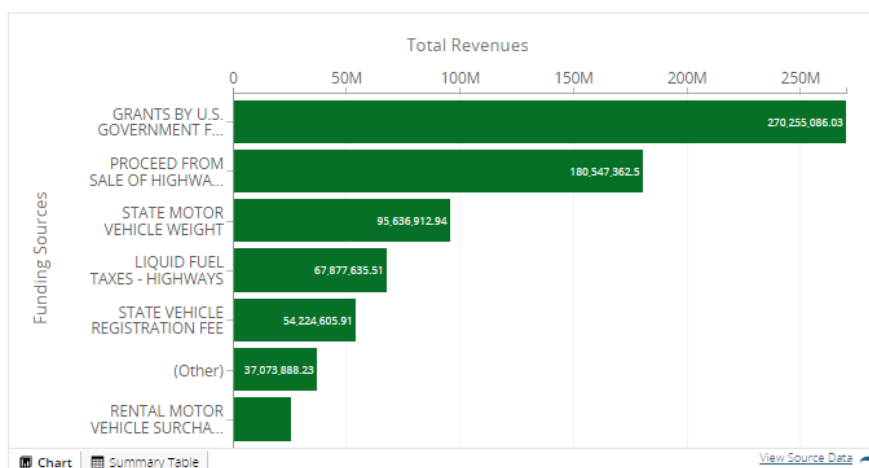


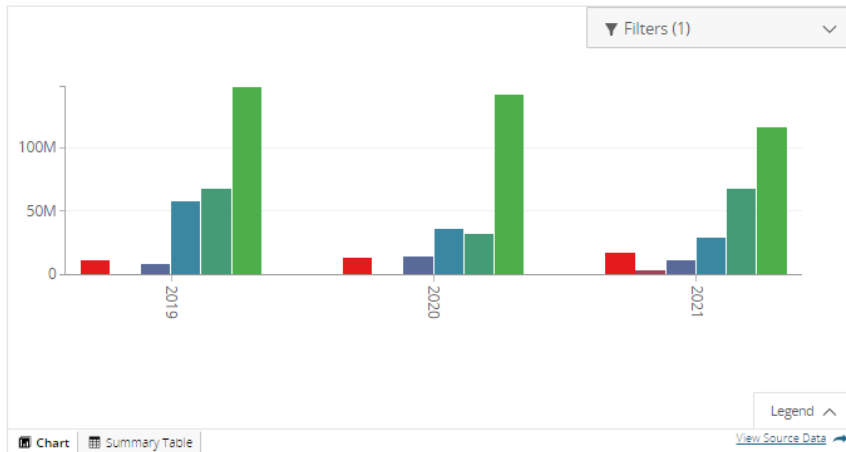
The Investments figure includes State and Federal funds as well as Capital Improvements Program (CIP) and Special Maintenance Program (SMP) funds.

**Note:** For a full breakdown of expenditures by category, [click here](#).

### Where Do Highway Funds Come From?

HDOT is funded directly by user fees (i.e., registration, weight fees, gas tax); other fees such as charges for permitted use of highways facilities, penalties & fines such as the \$10 Safe Routes to School surcharge for speeding in a school zone; and investment income.





## Expenditure Breakdown

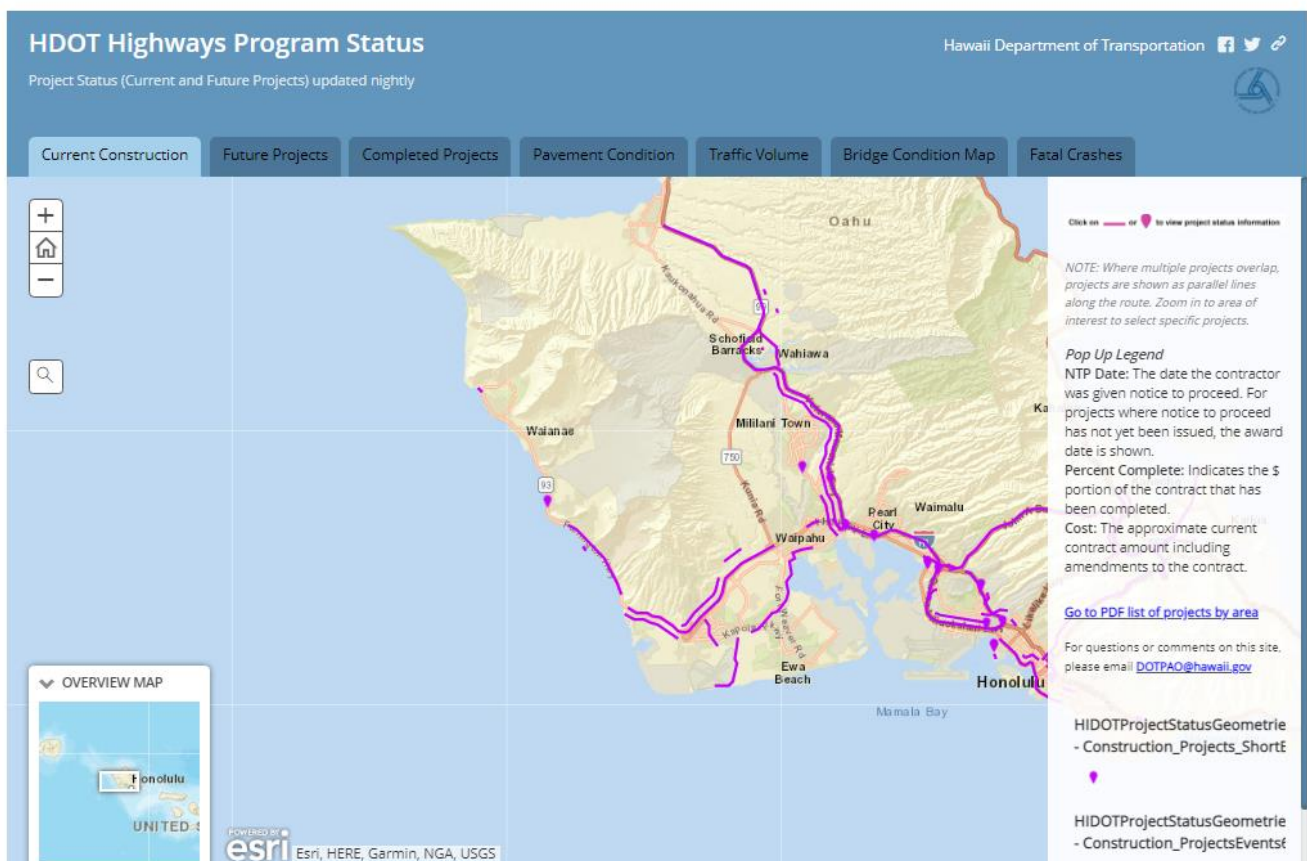
The graph on the left shows the breakdown of total expenditures by year. The information provided in this graph is pulled from the Highways Division's financial/accounting system -- HWYAC. Note: this chart includes ALL expenditures (payroll, project improvements , etc.).

Hover your mouse over the individual year to see total expenditures for each State Fiscal Year.

**Note:** the expenditures listed above includes all expenditure activity including payroll and direct labor. For a full breakdown of expenditures by category, [click here](#).

## Current Projects Map

The map below displays a geographical view of all current construction projects in the state.





## Overview

Projects that address safety support Hawaii's roadway users arriving safely at their destinations by collecting data to identify areas characterized with high crash occurrences; implementing both infrastructure improvements and non-infrastructure education and public outreach; and maintaining the integrity of and/or upgrading roadway features to reduce injuries and increase survivability during crashes.

Specific projects that address safety fall under the safety program and include rockfall and slope improvements/stabilization, guardrail and shoulder improvements, highway shoreline protection; bridge and pavement improvement/preservation/maintenance projects; freeway management system, intersection/traffic operation improvements, traffic signal optimization, traffic signal modernization, new traffic signal systems, Intelligent Transportation Systems; new roadway, expanding/improving existing roadways; bike and pedestrian improvements; freeway management systems; drainage improvement projects; and highway lighting.

## Objectives

**Objective 1: Reduce Fatalities and Serious Injuries on Hawaii's Highways and Bridges**

**Objective 2: Reduce Fatalities and Serious Injuries of non-motorized modes**

**NOTE:** There is often a lag between the projects currently being planned and the impact on performance measures. Progress that the organization is seeing now is based on work completed in previous years. [Click here](#) to download a graphic that shows the performance feedback loop.

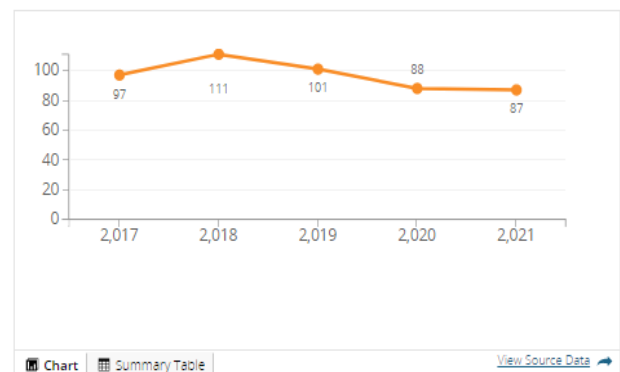
## Measuring Performance

### Number of Fatalities in Calendar Year 2021

Click [here](#) for more information about establishing targets.



### Historical Look at Fatal Crashes and Fatalities on Hawaii Roadways



**NOTE:** The chart to the right provides a high level trend for fatal vehicle crashes on Hawaii roadways. The graph displays data from the last 3 years, including the most up-to-date number of fatalities for 2021. It is **important to note** that data prior to 2019 reflects the number of fatal crashes, not the number of fatalities in each year. 2019 and 2020 data reflect the number of fatalities.

Targets in previous years:

- **CY 2020:** 101
- **CY 2019:** 110
- **CY 2018:** 106



## Assessing Hawaii Highways Fatalities to National Averages

A state's population has an obvious effect on the number of motor vehicle deaths. Fatality rates per capita and per vehicle miles traveled provide a way of examining motor vehicle deaths relative to the population and amount of driving.

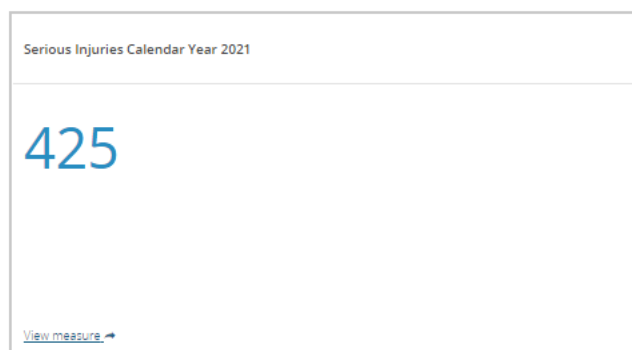
According to [2019 data collected](#) by Insurance Institute for Highway Safety (IIHS), across all 50 states in 2019, there were **1.11 fatalities** per 100 million Vehicle Miles Traveled (VMT). Hawaii, in comparison, recorded **0.98 fatalities** per 100 million VMT, approximately **12% lower** than the national average.

When ranking all 50 states from lowest number of fatalities per 100 million VMT to highest, Hawaii ranks in the **top third (#17)** of all states. Please note: the #1 ranked state has the least number of fatalities per 100 million VMT, while the #50 ranked state has the most number of fatalities per 100 million VMT.

As can be seen in the line chart above, **the trend of fatalities per calendar year is declining** meaning that we expect our ranking among the 50 States to improve as new data becomes available.

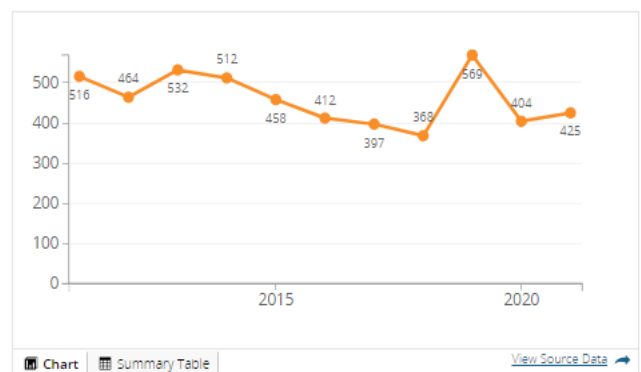
### Number of Serious Injuries in Calendar Year 2021

**NOTE:** The data used to create this measure is the most up-to-date data available due to the collection and validation process of each crash. The finalized data is available on a one-year lag.



### Historical Look Into Serious Injuries

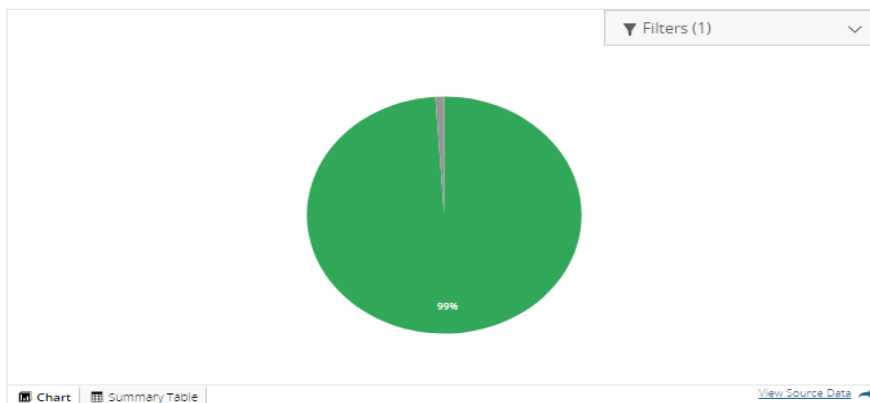
**NOTE:** The data used to create this measure is the most up-to-date data available due to the collection and validation process of each crash. The finalized data is available on a one-year lag.



#### Serious Injuries: Yearly Targets:

- **CY 2021:** 427
- **CY 2020:** 401
- **CY 2019:** 432

Click [here](#) for more information about how Safety targets are established.



## Percentage of Active Projects with Safety Component

The pie chart to the left provides the percentage of Active projects with a Safety component compared to the full list of active projects.

- The **GREEN** portion of the pie chart indicates the percentage of projects with a Safety component.
- The **GREY** portion of the pie chart indicates the percentage of projects without a Safety component

### Projects with Safety Component Started in CY2021

The number below reflects the number of projects involving Safety began construction in Calendar Year 2021.

Click [here](#) to view a list of these projects



### Active Projects with Safety Component in CY2021

The number below reflects the number of Active projects that involve a Safety component.

Click [here](#) to view a list of these projects



### Projects with Safety Component Completed in CY2021

The number below reflects the number of projects with a Safety component that were completed in Calendar Year 2021.

Click [here](#) to view a list of these projects



**NOTE:** The projects included in the counts and pie chart above are powered by data in the Project Status System (PSS) and the presence of data gaps may mean these numbers are underreporting the true number of projects.

**NOTE:** For documentation as to how these metrics were calculated, please click [here](#).

**NOTE:** One project can have multiple components depending on the scope of work. For example, a Safety project can also contribute to improving System Efficiency. This means that a project would be counted as a project with a Safety component as well as a project with a System Efficiency component.

# Infrastructure Work Completed In 2021 To Address Safety on Hawaii Highways

HDOT Projects that have a **Safety** component involve one or multiple Crash Countermeasures that aim to reduce the number of fatalities and serious injuries on the HDOT Highway System. When viewing the metrics below that display the number of projects started, active and completed with a safety component, Hawaii constituents should know that each of these projects that deploy the below crash counter measures is funded with the purpose of saving lives and reducing injuries.

As a result of the Safety projects worked on by HDOT Highways in Calendar Year 2021, the following Crash Countermeasures were implemented, resulting in an estimated fatality reduction of **3.75 lives** and an estimated serious injury reduction of **11.28 injuries**:

- **235 Miles of Wider 6" Edge Lines** - to reduce the number of fatalities and serious injuries caused by lane departure
- **35 Miles of Milled Rumble Strip Installed** - to reduce the number of fatalities and serious injuries caused by lane departure
- **1.76 Miles of New Guardrail Added** - to reduce the number of fatalities and serious injuries caused by lane departure
- **14 Raised Crosswalks Implemented** - to reduce pedestrian fatalities and serious injuries
- **2 Additional Traffic Signals at Intersections** - to reduce the number of fatalities and serious injuries caused by broadside collisions
- **1 Additional All-Way Stops Implemented** - to reduce the number of fatalities and serious injuries caused by broadside collisions
- **10.3 Miles of Lower Speed Limit** - aimed at reducing fatalities/injuries caused by speeding

To continue to ensure HDOT projects focus on reducing the fatalities and serious injuries on Highways, HDOT will conduct the following:

1. Continue to recommend safety countermeasures on all state highway projects.
2. Continue to develop Highway Safety Improvement Program (HSIP) projects to deploy low-cost safety improvements.
3. Assist counties with evaluating their roadways for safety improvements.
4. Quarterly, monitor existing and future safety goals, countermeasures deployed and planning to be deployed, potential crash reduction numbers and alert administration if crashes are exceeding goal numbers

# Non-Infrastructure Work Being Done To Address Safety on Hawaii Highways

In order to promote Safety on Hawaii Highways, HDOT's Motor Vehicle Safety Office conducts a series of projects and activities to address each of the National Highway Traffic Safety Administration (NHTSA)'s Priority Areas. In FFY 2021, HDOT completed over **80 projects or activities**. Below is a summarized breakdown of the projects and activities completed by NHTSA Priority Area with some specific examples of projects/activities that fall under each area.

## Highlight on Speeding Targeted Enforcement Project:

**About the Project:** The objectives of the speeding media campaign project are to deliver the message of a speed reduction to our island's audiences, with a focus on the target demographics of males 18-35 years of age. Change the audience's attitude and behavior to drive at a safe speed and decrease the speed-related injuries and fatalities. The television, radio station and Over the Top (OTT) media are three of the major parts of the media campaign implemented. The length of a TV campaign spot is set to be 30 seconds and in total there were over **190 TV spots**. The length of a radio campaign is 5, 10 or 30 seconds and the total number of radio spots is over **2,000**. The net costs (including tax) are summarized in Table I in the document (referenced below). The number of the impressions (the total number of exposures to the safety media campaign messages) is **2,908,976**. About **744,219 people** are considered to fully get the messages.

## Impacts of the Project:

Significant speeding-targeted safety improvements were archived in FFY 2021 resulted from the funded speed media campaign and speed enforcement projects together. During the FFY 2021, there were 50 fatalities, with 17 of them being speed-related fatalities. This equates to 34% of fatalities being speed-related fatalities, which is a **decrease of 7%** from the five year average, 41%. This decrease is consistent with the HDOT safety program's goals to reduce speed-related fatalities significantly. It attributes the success to the projects conducted on grant-funded and department-funded operations including the combination of the media campaign and speed enforcement projects.

Compared with the 5-year average data from FFYs 2016-2020, a **reduction of 6.2 fatalities** was obtained in FFY 2021 as a result of the Speeding-Targeted Safety Project.

To read the full Speeding-Targeted Safety Project Assessment, [please click here](#).

More information on each activity available upon request.

## Distracted Driving: 7 Projects or Activities

- Distracted Driving Awareness Media Campaign - HDOT used funds for a paid media campaign to raise the public's awareness about the dangers of driving while distracted, and to provide support for statewide High Visibility Enforcement (HVE) efforts
- Distracted Driving High -Visibility Enforcement with each County's Police Department - Each police department will use the grant funds to conduct overtime High Visibility Enforcement (HVE) of Hawaii's MED Law.

## Impaired Driving: 23 Projects or Activities

- HDOT Alcohol Impaired Driving Media Campaign - HDOT using grant funds to implement an alcohol-impaired driving paid media campaign to support NHTSA's Impaired Driving National Enforcement Mobilizations.
- State Laboratory and Intoxilyzer Training - Grant funds to Department of Health in order to establish Hawaii's first forensic toxicology state laboratory to test OVUII-alcohol blood and urine samples for Maui, Kauai and Hawaii counties, and OVUII-drug urine and blood samples for all counties. Funds will also be used to conduct statewide Intoxilyzer trainings for law enforcement agencies, including the four county police departments, Sheriff Division and county prosecutors.
- Police Department Impaired Driving and Youth Deterrence Program - Police departments on Oahu, Maui, Kauai and Hawaii are using grant funds to conduct overtime enforcement of Hawaii's impaired driving laws, including underage drinking; and for DRE-related activities. Funds will also be used for representatives to attend relevant local and national meetings, trainings and conferences; and equipment-related purchases.

## Motorcycle Safety: 3 Projects or Activities

- Motorcycle Media - HDOT used grant funds to purchase radio, movie theater and television airtime for Public Service Announcements (PSAs)
- Hawaii Community College (HCC) - HCC used grant funds to support their motorcycle rider training program

## Occupant Protection: 13 Projects or Activities

- Child Restraint Program - worked with City and County of Honolulu, Hawaii County, Maui County and Kauai County to conduct community car seat checks, maintaining child restraint inspection stations and performing educational presentations on the importance of proper child restraint.
- Seatbelt Enforcement with County Police Departments - Conducted overtime enforcement of Hawaii's seatbelt and child restraint laws.
- HDOT Click It Or Ticket (CIOT) Media - HDOT will use grant funds to conduct a statewide media campaign to support CIOT. The goal is to reduce motor vehicle fatalities and injuries by educating the public about the benefits of using seat belts and child restraints.

## Emergency Medical Services: 4 Projects or Activities

- Edraulic Extrication Equipment Initiative with Fire Departments in City and County of Honolulu, Hawaii County and Maui County.



**Pedestrian and Bicycle Safety:** 6 Projects or Activities

- HDOT Pedestrian Media Campaign - HDOT used grant funds to purchase radio, movie theater and television air time for Public Service Announcements (PSAs)
- Police Department Pedestrian Enforcement - Worked with HPD to reduce pedestrian fatalities and injuries by conducting overtime enforcement and education
- Police Department Bicycle Enforcement - Worked with HPD to reduce pedestrian fatalities and injuries by conducting overtime enforcement and education

**Police Traffic Services:** 9 Projects or Activities

- Police Department Traffic Services - Honolulu Police Department, Hawaii County Police Department, Maui Police Department and Kauai Police Department all sent officers to participate in the Institute of Police Technology and Management (IPTM) traffic crash reconstruction courses.

**Speed Management:** 6 Projects or Activities

- Police Department Speed Enforcement - HPD, HCPD, MPD and KPD all conducted overtime speed enforcement and purchased new lasers (40 on Oahu, 20 in Hawaii County, 4 in Maui County, 12 in Kauai County as well as 9 vehicle mounted radars)
- HDOT Speed Media Outreach - reduce speed-related fatalities and injuries by educating the public about the dangers of speeding

**Traffic Records:** 11 Projects or Activities

- HDOT Traffic Records System: HDOT's Traffic Safety Section will use funds to continue development and upgrade of its SHACA database; and send three representatives to the Traffic Records Forum.
- HPD Traffic Records: HPD will continue the e-citation pilot project; build an interface with HDOT's Hawaii Geolocating System; and send three representatives to the International Forum on Traffic Records.
- HCPD Traffic Records: HCPD will build an interface with HDOT's Hawaii Geolocating System; participate in Hawaii TRCC meetings; continue building the interface with HDOT's SHACA database; purchase an upgrade to the Easy Street Draw program; and send three representatives to the International Forum on Traffic Records.
- MPD Traffic Records: MPD will continue the e-citation pilot program, including the data analysis component; participate in Hawaii TRCC and E-Citation Subcommittee meetings; continue building the interface with HDOT's SHACA database; and send two representatives to the International Forum on Traffic Records.
- KPD Traffic Records: KPD will continue building the interface with HDOT's SHACA database; participate in Hawaii TRCC meetings; build an interface with HDOT's Hawaii Geolocating System; and send two representatives to the International Forum on Traffic Records.

# Action Plan For Achieving Objectives

The safety program is guided by the Highway Safety Improvement Program (HSIP) and Strategic Highway Safety Plan (SHSP). The HSIP is a core federal program that aims to reduce traffic fatalities and serious injuries on public roads and requires a data-driven, strategic approach. This includes project implementation and tracking performance through the establishment of targets for federally required performance measures. The SHSP is a requirement of the HSIP and is developed through a collaborative multidisciplinary process with safety partners across the state. It identifies strategies for addressing high priority safety needs.

The implementation of the Rockfall and Shoreline Programs also help to improve the safety of the transportation system.

## Future Projects Involving Safety Component

This list includes projects from the Statewide Planning Document (STIP) that have money allocated to the project in the next two federal fiscal years. [Click here](#) for a more detailed explanation on how these projects were identified.

**NOTE:** Projects below may be listed in multiple categories because they fulfill certain criteria for other categories.

| PSS_ID       | Category | house_district | senate_district | District | State_OR_County | P |
|--------------|----------|----------------|-----------------|----------|-----------------|---|
| HS14-22      | Congest  | 2, 1           | 1               | Hawaii   | State           | H |
| KS11-22      | Congest  | 14             | 8               | Kauai    | State           | K |
| KS11-22      | Congest  | 14             | 8               | Kauai    | State           | K |
| HS12-19      | SysPres  | 1              | 4               | Hawaii   | State           | H |
| HS12-19      | SysPres  | 1              | 4               | Hawaii   | State           | H |
| OS73-19      | Safety   | 28, 49         | 14, 24, 25      | Oahu     | State           | L |
| HS20-19      | SysPres  | 1              | 4               | Hawaii   | State           | H |
| 1 to 7 of 94 |          |                |                 |          |                 |   |



# Foster System Preservation

## Overview

Projects that address system preservation preserve, upgrade, and maintain the State Highway System to help ensure the functionality of the system, that it operates safely and efficiently, and meets federal requirements.

Specific projects that address system preservation fall under the system preservation program and include the pavement and bridge programs.

## Objectives and Policies

### Objective 1: Improve Pavement Conditions

### Objective 2: Improve Bridge Conditions

### Objective 3: Preservation and Improvement of Other Assets

**NOTE:** There is often a lag between the projects currently being planned and the impact on performance measures. Progress that the organization is seeing now is based on work completed in previous years. [Click here](#) to download a graphic that shows the performance feedback loop.

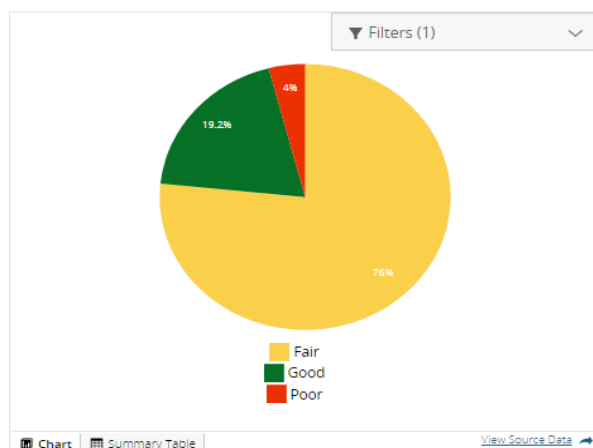
## Measuring Performance

### Pavements by Condition

This pie chart breaks down the number of miles of pavement in **Good**, **Fair** or **Poor** Condition.

By default, the chart looks at Interstate sections. Use the filter pane to turn off Interstate and turn on Non-NHS Interstate to see that breakdown.

**Note:** the percentages in the pie chart below are using the most recently available, **unofficial**, data. Once updated official data becomes available, the chart will be updated.



#### Federal Highways Administration 4-Year Targets:

**Good** Condition - Interstate System: 7% Non-Interstate: 15%

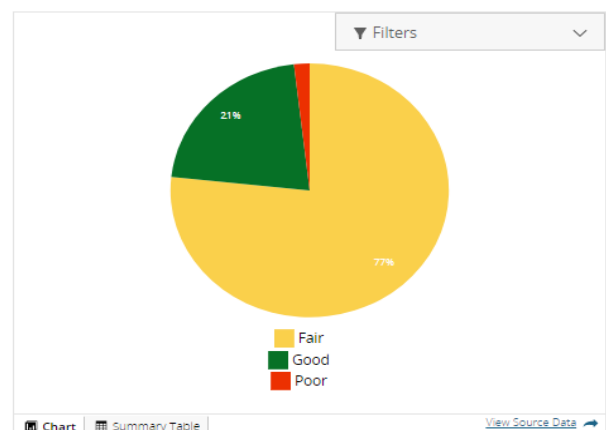
**Poor** Condition - Interstate System: 4% Non-Interstate: 4%

**NOTE:** For documentation as to how these metrics were calculated, please click [here](#).

### Bridges by Condition

The pie chart below shows the percentage of bridges along the NHS that have been categorized as being in **Good**, **Fair** or **Poor** condition. Hover your mouse of each slice of the pie to view the number of bridges determined to be in each category.

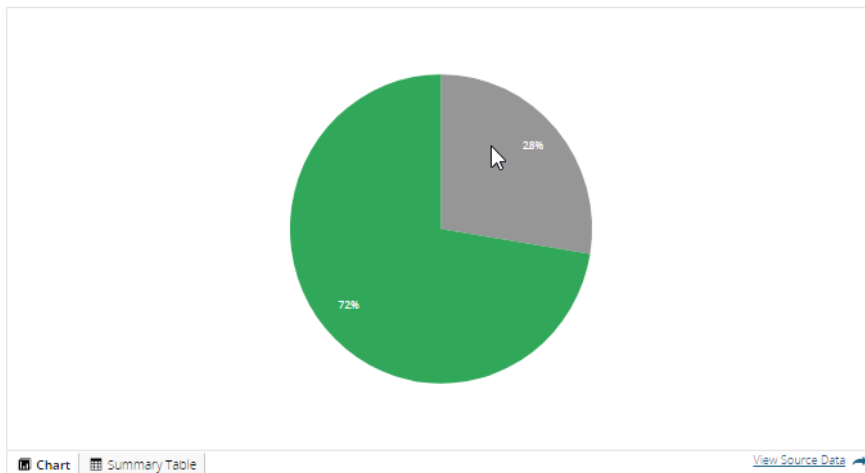
**NOTE:** The Bridge data displayed below is based on up-to-date information from the most recent inspections and is showing fiscal year 2021 data from the Bridge Management system (BrM).



#### Federal Highways Administration 4-Year Targets:

**Good** Condition - NHS: 20%

**Poor** Condition - NHS 2.0%



### Percentage of Active Projects with System Preservation Component

The pie chart to the left provides the percentage of Active projects with a System Preservation component compared to the full list of active projects.

- The **GREEN** portion of the pie chart indicates the percentage of projects with a System Preservation component.
- The **GREY** portion of the pie chart indicates the percentage of projects without a System Preservation component

**NOTE:** Hover your mouse over the pieces of the pie chart to view the number of active projects

### Projects with System Preservation Component Started in CY2021

The number below reflects the number of projects involving system preservation that began construction in Calendar Year 2021.

Click [here](#) to view a list of these projects



### Active Projects with System Preservation Component

The number below reflects the number of projects involving System Preservation that are currently active in Calendar Year 2021.

Click [here](#) to view a list of these projects



### Completed Projects with System Preservation Component

The number below reflects the number of projects involving System Preservation that completed construction in Calendar Year 2021.

Click [here](#) to view a list of these projects



**NOTE:** The projects included in the counts and pie chart above are powered by data in the Project Status System (PSS) and the presence of data gaps may mean these numbers are underreporting the true number of projects.

**NOTE:** For documentation as to how these metrics were calculated, please click [here](#).

**NOTE:** One project can have multiple components depending on the scope of work. For example, a System Preservation project can also contribute to improving Safety. This means that a project would be counted as a project with a Safety component as well as a project with a System Preservation component.



## Action Plan For Achieving Objectives

The system preservation program is guided by the Transportation Asset Management Plan (TAMP). The TAMP is a federal requirement and based on an evaluation of existing pavement and bridge condition, desired targets, projected funding, various investment scenarios, and other input provides a recommended ten year investment plan for implementation of pavement and bridge preservation projects.

The TAMP is developed with information from the Bridge Management Program and Pavement Management Program.

## Future Projects Involving System Preservation Component

This list includes projects from the Statewide Planning Document (STIP) that have money allocated to the project in the next two federal fiscal years.

[Click here](#) for a more detailed explanation on how these projects were identified.

**NOTE:** Projects below may be listed in multiple categories because they fulfill certain criteria for other categories.

| <div><div>Download</div><div></div></div> |          |                    |                 |          |                 |   |
|---|----------|--------------------|-----------------|----------|-----------------|---|
| PSS_ID                                    | Category | house_district     | senate_district | District | State_OR_County | P |
| OS61-15                                   | SysPres  | 47                 | 23              | Oahu     | State           | K |
| OS01-19                                   | SysPres  | 33, 31, 50, 49, 48 | 14, 24, 25, 15  | Oahu     | State           | B |
| OS01-19                                   | SysPres  | 47                 | 23              | Oahu     | State           | B |
| MS11-19                                   | SysPres  | 9                  | 5               | Maui     | State           | B |
| HS01-19                                   | SysPres  | 6, 7               | 4               | Hawaii   | State           | B |
| OS01-19                                   | SysPres  | 43                 | 20              | Oahu     | State           | B |
| OS01-19                                   | SysPres  | 33                 | 14              | Oahu     | State           | B |
|   |          |                    |                 |          |                 |   |
| 1 to 7 of 95                              |          |                    |                 |          |                 |   |



## Overview

Projects that address system efficiency primarily provide infrastructure, operations improvements, and technology to optimize traffic flow, reduce travel times, and address recurring and non-recurring events/incidents that cause congestion. They can also provide new and/or additional capacity for all modes of transportation.

Specific projects that address system efficiency primarily fall under the congestion program, but can also fall under the capacity program and include the freeway management system, intersection operations improvements, traffic signal optimization, traffic signal upgrades, Intelligent Transportation Systems, new roadways, and expanding existing roadways.

## Objectives

### Objective 1: Improve System Efficiency

**NOTE:** There is often a lag between the projects currently being planned and the impact on performance measures. Progress that the organization is seeing now is based on work completed in previous years. [Click here](#) to download a graphic that shows the performance feedback loop.

## Measuring Performance: Travel Time Reliability

### What Is Travel Time Reliability?

[As defined by](#) the Federal Highway Administration (FHWA), Travel Time Reliability measures the extent of the unexpected delay in travel time. A formal definition for travel time reliability is: the consistency or dependability in travel times, as measured from day-to-day and/or across different times of the day.

At HDOT, while we are focused on improving travel time reliability for Hawaii drivers, we are also always delivering projects that combat congestion. The way we see it, it is not good enough to have reliably long travel times but our end goal is to have reliable fast travel times. Our page dedicated to System Efficiency can help outline all of the past, future and present projects that will help us get to the goal of reliable, fast travel times.

### Why is Travel Time Reliability Important?

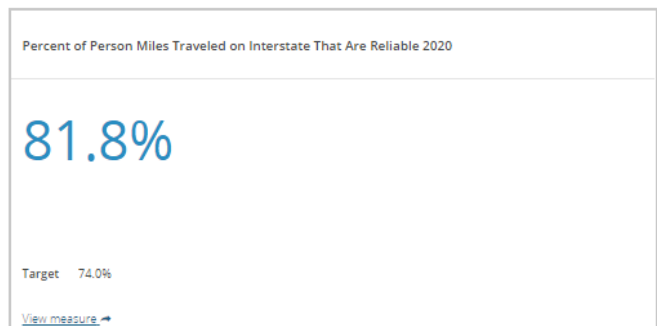
Personal and business travelers value reliability because it allows them to make better use of their own time.

### Measuring Travel Time Reliability in Hawaii

The measure to the right displays the **2020 official** percent of person-miles traveled on the Interstate that are considered reliable. The higher the reliability percentage, the more reliable the highway system is.

This data is being pulled from the Highway Performance Monitoring System (HPMS). Official data has about a one year lag. For example, 2021 official data is released in June 2022. The four year target for this metric is **70%**.

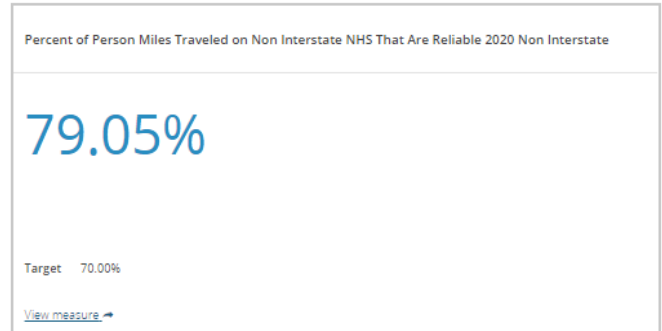
The four year target for this metric is **74%**



The measure to the right displays the **2020 official** percent of person-miles traveled on the non-Interstate NHS roadways that are considered reliable.

This data is being pulled from the Highway Performance Monitoring System (HPMS). Official data has about a one year lag. For example, 2021 official data is released in June 2022. The four year target for this metric is **70%**.

**NOTE:** These metrics are calculated using 2020 HPMS data. This is the most recent data available. HPMS data for 2021 will be reported by June 2022.



While the metrics above are calculated using the most recent official HPMS data, HDOT can also leverage unofficial travel time reliability data for the current calendar year to inform their decision making. [Click here](#) to view a map of 2020 Travel Time Reliability. Click on the 'Reliability Documentation' tab at the bottom of the map to view more information about each reliability metric

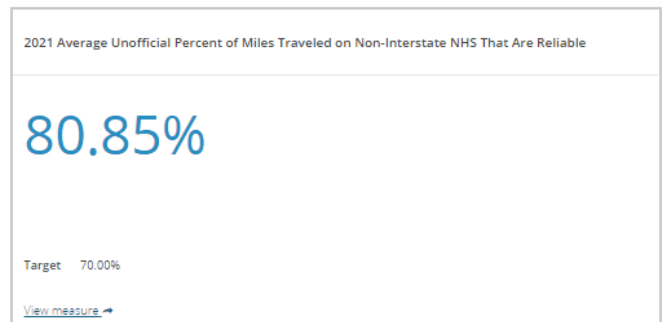
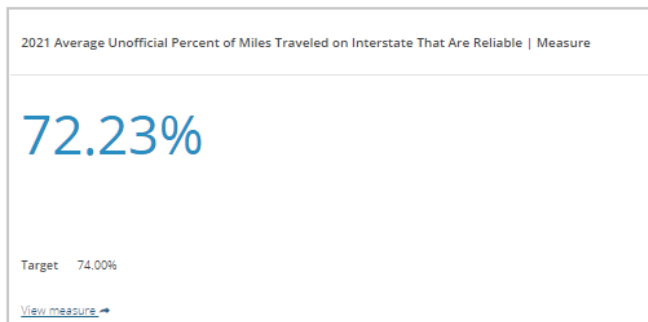
[Click here](#) for more information on how these Reliability metrics were calculated.

## Most Recent (Unofficial) Data for Travel Time Reliability

To assist agencies with meeting the MAP-21 regulations, the Federal Highway Administration (FHWA) provides free access to the National Performance Management Research Data Set (NPMRDS), a national database of probe-vehicle-based speed and travel time data.

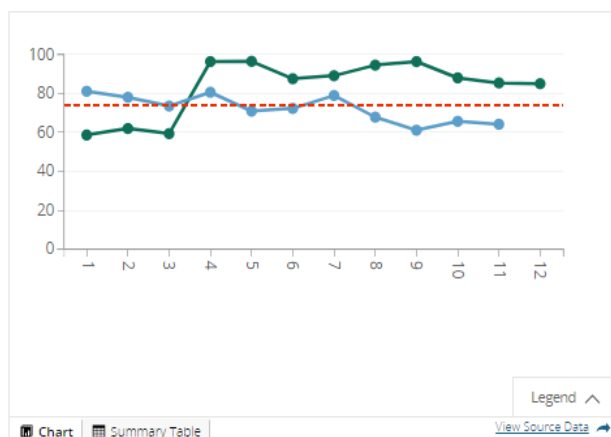
While **unofficial** data, HDOT leverages the most recently available data from NPRMDS while the annual HPMS data is certified and made official.

Throughout the year, as HDOT monitors the unofficial reliability data below, the DOT can take action in an effort to improve the reliability in a responsive manner. Examples of countermeasures include: Traffic signal upgrades like the ones done on Nimitz Highway which **improved 17% during the AM Peak Period** and **24% during the PM Peak Period** and adjusting contraflow schedules [as was done for Kuhio Highway](#).



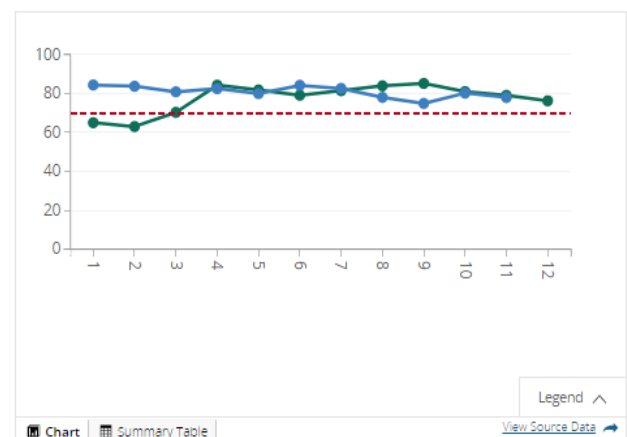
### Unofficial % of Reliable Miles Traveled on Interstate

The chart below uses the most up-to-date (unofficial) data to calculate the Percentage of Miles Traveled on Interstate that are reliable in each month (Jan=1, Dec=12) by year (see legend). The red line indicates the 4-year goal.

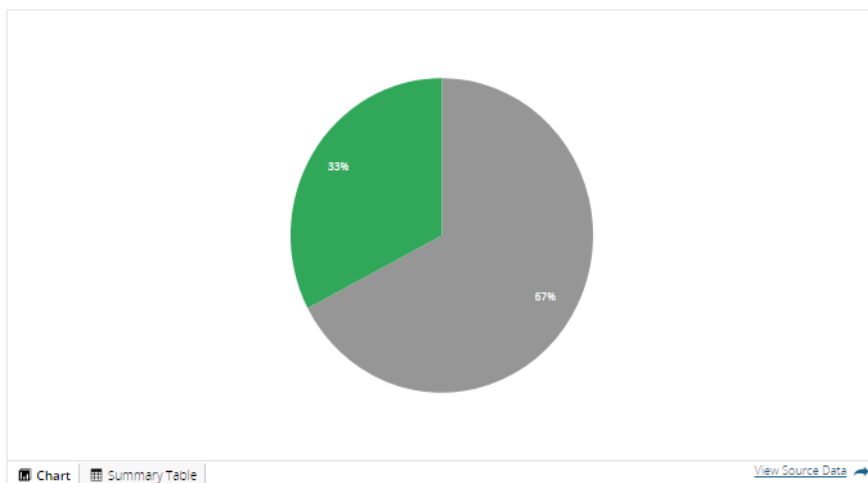


### Unofficial % Reliable Miles Traveled on Non-Interstate NHS

The chart below uses the most up-to-date (unofficial) data to calculate the Percentage of Miles Traveled on Non-Interstate NHS highways that are reliable in each month (Jan=1, Dec=12) by year (see legend). The red line indicates the 4-year goal.







## Percentage of Active Projects with System Efficiency Component

The pie chart to the left provides the percentage of Active projects with a System Efficiency component compared to the full list of active projects.

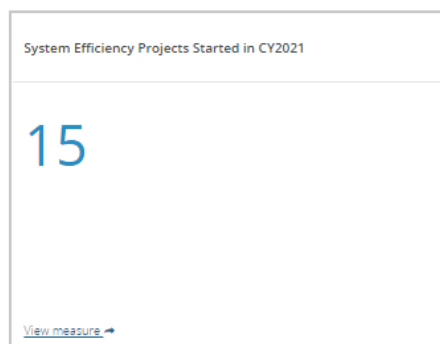
- The **GREEN** portion of the pie chart indicates the percentage of projects with a System Efficiency component.
- The **GREY** portion of the pie chart indicates the percentage of projects without a System Efficiency component

**NOTE:** Hover your mouse over the pieces of the pie chart to view the number of active projects

### Projects with System Efficiency Component Started in CY2021

The number below reflects the number of projects involving System Efficiency that began Construction in Calendar Year 2021.

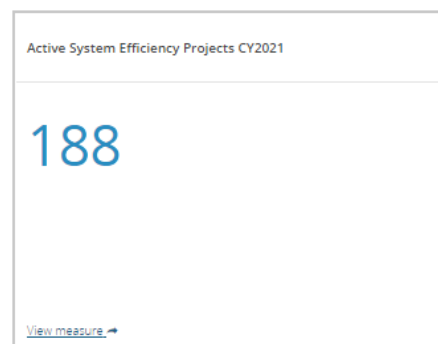
Click [here](#) to view a list of these projects



### Active Projects with System Efficiency Component

The number below reflects the number of projects involving System Efficiency that are currently active in Calendar Year 2021

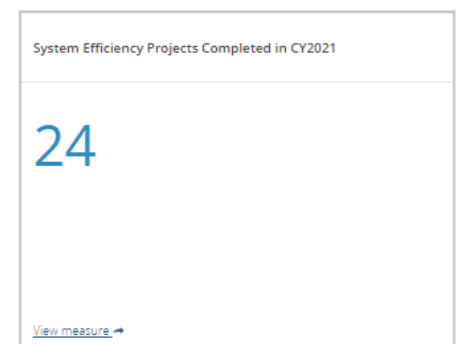
Click [here](#) to view a list of these projects



### Completed Projects with System Efficiency Component in CY2021

The number below reflects the number of projects involving System Efficiency that completed construction in Calendar Year 2021.

Click [here](#) to view a list of these projects



**NOTE:** The projects included in the counts and pie chart above are powered by data in the Project Status System (PSS) and the presence of data gaps may mean these numbers are underreporting the true number of projects.

**NOTE:** For documentation as to how these metrics were calculated, please click [here](#).

**NOTE:** One project can have multiple components depending on the scope of work. For example, a System Efficiency project can also contribute to improving Safety. This means that a project would be counted as a project with a System Efficiency component as well as a project with a Safety component.

## Work Completed To Address System Efficiency on Hawaii Highways

### Completion of Nimitz Highway Traffic Signal Upgrades from Sand Island Access Road to Kalia Road

The project scope provides improved connectivity and optimization of the traffic signals on the corridor. Additionally, it provides the V2X technology information via the Glance Travel Safely application. This project improves congestion and provides traveler information on the Nimitz Highway corridor. The traveler (vehicle, bicyclists, and pedestrians) can obtain congestion and safety information. After the upgrade, the travel time for this segment has **improved 17% during the AM Peak Period** and **24% during the PM Peak Period**.

### Completion of Moanalua Freeway (Interstate Route H-201) Restriping of Additional Lane in Westbound Direction

This project ran from Fort Shafter Overpass to Interstate Route H-1, about **4.5 miles of new lane**. This project was completed in the first quarter of 2021 and has **improved congestion and travel time** by adding vehicular capacity in the westbound direction.

Since the completion of this project along with the previous H-1 Westbound restriping of an additional lane the westbound travel time from Fort Shafter Overpass onto the H-1 merge has **improved travel time by about 5 minutes**. The time savings in the westbound direction during the **PM Peak Period** is about **45,000 hours annually**.

Additionally, the congestion and merge from Moanalua Highway westbound onto Kamehameha Highway (Pearl Ridge) has improved due to the additional lane to Pearl Ridge.

## Hawaii Department of Transportation (HDOT) Freeway Service Patrol (FSP) Expansion Into the Community of Kapolei

Recently, the Hawaii Department of Transportation (HDOT) was nominated for the **Quality of Life/Community Development Category in America's Transportation Awards** for the agency's efforts to expand the coverage area for the Hawaii Freeway Service Patrol (FSP) to the West Oahu community of Kapolei. The Hawaii FSP program provides free emergency roadside assistance to motorists who are stranded on the H-1, H-2, H-201 Moanalua Freeways. These services help keep freeways clear, preventing traffic backups and reducing the risk of secondary crashes caused by traffic congestion.

Kapolei, commonly referred to as Oahu's "Second City", has seen a tremendous population growth in the last 30 years with the increase in government services, schools and businesses. The education system has grown in the area with Kapolei elementary, middle, and high schools, the University of Hawaii West Oahu Campus as a four-year full-service campus, and several private schools. Tourism and businesses have also grown in the area with Ko Olina, including the Aulani Disney resort; The Four Seasons Resort Oahu; Marriott's Ko Olina Beach Club; and the Beach Villas at Ko Olina; and a new shopping mall, Ka Makana Ali'i.

This tremendous growth has resulted in an increase in traffic congestion during peak times. Further, during morning peak period motorists are allowed to use the shoulders as travel lanes to increase capacity. The use of the shoulders eliminates an area for vehicles to pull over in the event of a mechanical breakdown or motor vehicle collision. To increase the safety of its citizens, HDOT expanded FSP into the community of Kapolei to quickly respond and clear any vehicles from lanes of travel.

HDOT FSP responds to approximately **8,800 events** per year that involve a traffic incident, removing motorists from the travel lanes of traffic or providing on-scene motorists assistance to citizens that have a **flat tire, dead battery or run out of gas**. Since the FSP team may be the first to respond, operators are trained in first-aid, CPR, fire extinguishing and recognizing hazardous materials.

With the expansion of FSP into West Oahu, HDOT has increased its coverage by **14%**. The presence of FSP in the "Second City" has significantly benefited the community in increased safety and reduced congestion.

### Towing Services for Pali Highway & Likelike Highway on the Island of Oahu

Two towing contracts were executed in order to provide towing services on the Pali & Likelike Highway segments from the Kaneohe and Kailua areas through the tunnels to onto the Honolulu area in both directions.

The contract work assists with removing stalled trucks and vehicles from the through lanes on the highway. National studies have found when a through lane is blocked the travel time may **increase from 100% to 500% normal**. The removal of these non-recurring incidences allows the traffic levels to get back to normal traffic flow levels faster.

To ensure that incidents that occur inside the tunnels are quickly responded to, these towing contracts allow tow trucks to stand by just outside each tunnel. Upon receiving notice of a stall or an accident that requires towing, the drivers can be at the incident within minutes. This reduced response time means that traffic and congestion caused by incidents in each tunnel are reduced significantly.

### Testimonials:

*"I have known about the Hawaii Freeway Service Patrol for about 10 years and experienced firsthand the outstanding work that they do providing free motorist assistance. I was delighted to learn about the Freeway Service Patrol expanding their coverage from Kunia out to Kapolei! Living in Kapolei and making the daily commute to town, I have already witnessed them clearing out stalled vehicles in the morning traffic. Thank you to the Hawaii Freeway Service Patrol!"* Vanessa Sanchez

*"The [HDOT FSP Operator] helping us is really helpful. That was the first time I was stranded on the freeway. Thanks much."* Motorist Jane

## Action Plan For Achieving Objectives

System efficiency is guided by the Highways Division's travel demand model (TDM), which is developed as part of the long range land transportation plans. The TDM assesses the existing transportation network's current and projected performance (level of service) based on current and proposed land use and population projections. It also assesses the projected performance of the future transportation system based on the implementation of recommended projects and future land use and population projections.

# Future Projects Involving System Efficiency Component

This list includes projects from the Statewide Planning Document (STIP) that have money allocated to the project in the next two federal fiscal years.

**NOTE:** FFY 2023 has been programmed as an informative year only. It is not financially constrained and is used for planning purposes only. The 2022-2025 STIP, currently in development, will be programming a vetted, fiscally constrained FFY 2023.

[Click here](#) for a more detailed explanation on how these projects were identified.

**NOTE:** Projects below may be listed in multiple categories because they fulfill certain criteria for other categories.

| PSS_ID       | Category | house_district | senate_district | District | State_OR_County | P |
|--------------|----------|----------------|-----------------|----------|-----------------|---|
| HS14-22      | Congest  | 2, 1           | 1               | Hawaii   | State           | H |
| OS2157-22    | Congest  | 42             | 20              | Oahu     | State           | F |
| KS11-22      | Congest  | 14             | 8               | Kauai    | State           | K |
| KS11-22      | Congest  | 14             | 8               | Kauai    | State           | K |
| OS09-22      | Congest  | 42             | 20              | Oahu     | State           | F |
| OC10-19-P21  | Congest  |                |                 | Oahu     | County          | T |
| MC30-15      | Congest  |                |                 | Maui     | County          | P |
| 1 to 7 of 28 |          |                |                 |          |                 |   |





## Overview

The Highways Division continues its efforts to provide information and transparency about the Bicycle and Pedestrian Program. Below are performance measures that include expenditures, safety, and needs addressed as well as a summary of the program action plan.

Specific projects that addresses multi-modal integration includes all pavement and striping improvement projects; sidewalks; rail/railroad; ADA; sidewalks; curb ramps; bridge improvement projects affecting bikes and pedestrian; traffic signals projects; signage projects that include bike & pedestrian signage installation/replacement; any safety projects affecting bikes and pedestrian; raised crosswalks; and speed humps.

Note: Any projects on the Interstate/Freeways do not qualify as multi-modal. A freeway is a highway where access to the roadway is controlled. Drivers can only enter a controlled-access freeway by ramps. Freeways do not have intersections.

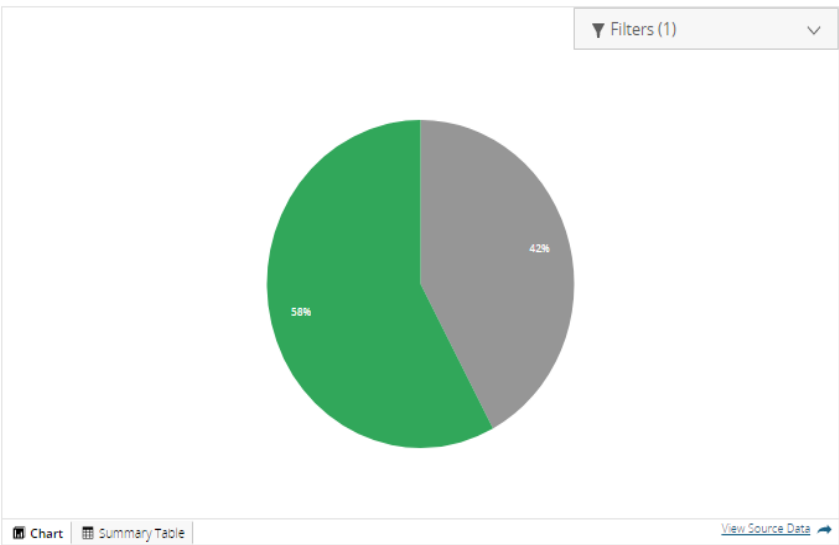
## Objectives

**Objective 1: Invest in Bicycle and Pedestrian Improvements**

**Objective 2: Improve Bicycle and Pedestrian Safety, Access, and Network Connectivity**

**NOTE:** There is often a lag between the projects currently being planned and the impact on performance measures. Progress that the organization is seeing now is based on work completed in previous years. [Click here](#) to download a graphic that shows the performance feedback loop.

## Measuring Performance



### Percentage of Active Projects with Bicycle and/or Pedestrian Components

The pie chart to the left provides the percentage of Active projects with Bicycle and/or Pedestrian components compared to the full list of active projects.

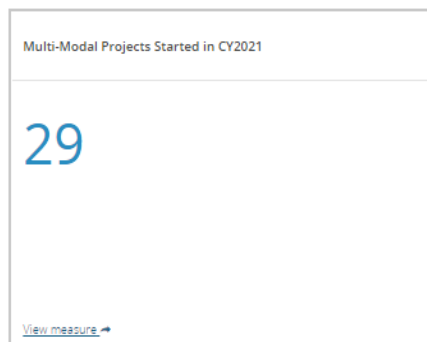
- The **GREEN** portion of the pie chart indicates the percentage of projects with a Bicycle and/or Pedestrian components.
- The **GREY** portion of the pie chart indicates the percentage of projects without a Bicycle and/or Pedestrian components.

**NOTE:** Hover your mouse over the pieces of the pie chart to view the number of active projects

### Projects with Bicycle and/or Pedestrian Components Started in CY2021

The number below reflects the number of projects involving Bicycle and/or Pedestrian components that began construction in Calendar Year 2021.

Click [here](#) to view a list of these projects



### Active Projects with Bicycle and/or Pedestrian Components in CY2021

The number below reflects the number of projects with a Bicycle and/or Pedestrian components that are active.

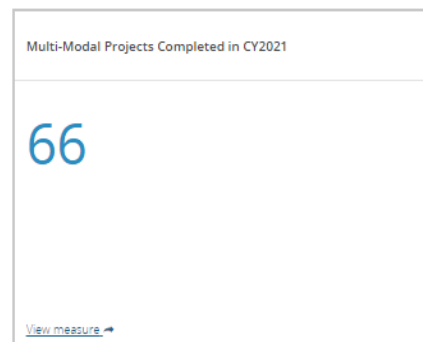
Click [here](#) to view a list of these projects



### Completed Projects with Bicycle and/or Pedestrian Components in CY2021

The number below reflects the number of projects with a Bicycle and/or Pedestrian components that completed construction in Calendar Year 2021

Click [here](#) to view a list of these projects

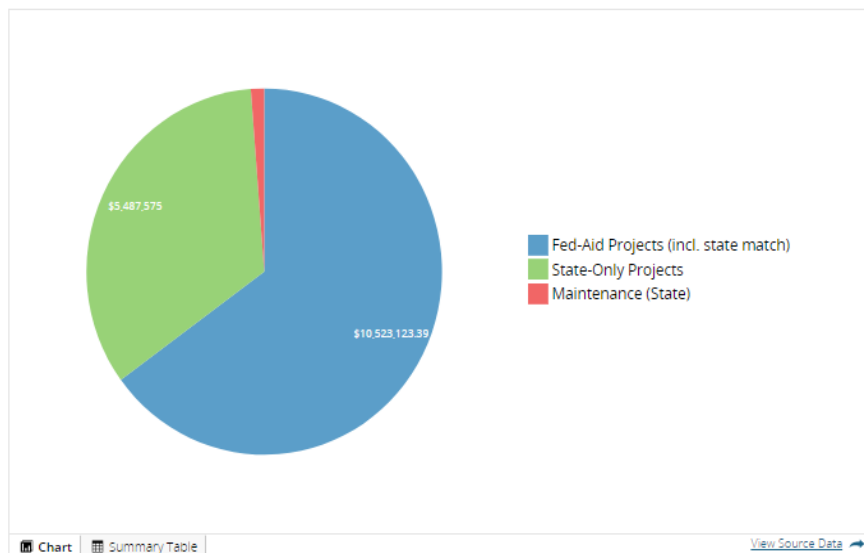


**NOTE:** The projects included in the counts and pie chart above are powered by data in the Project Status System (PSS) and the presence of data gaps may mean these numbers are underreporting the true number of projects.

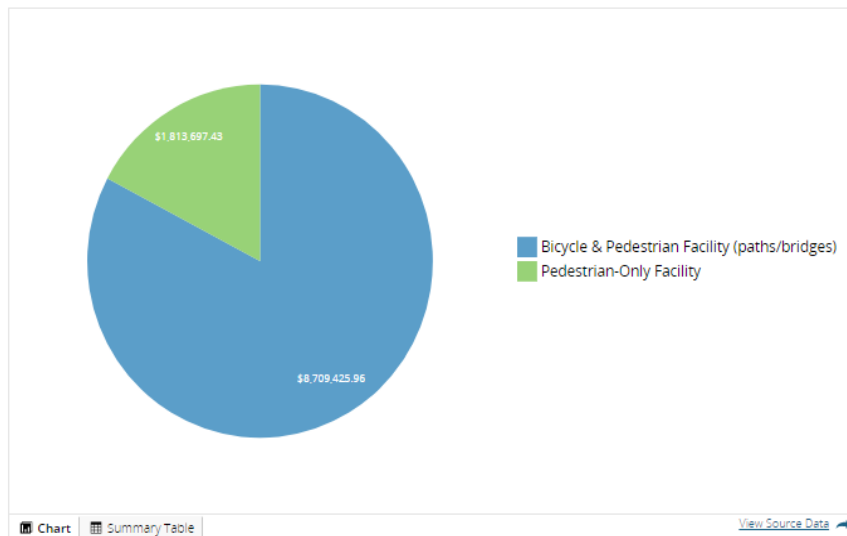
**NOTE:** For documentation as to how these metrics were calculated, please click [here](#).

**NOTE:** One project can have multiple components depending on the scope of work. For example, a Bicycle or Pedestrian project can also contribute to improving Safety. This means that a project would be counted as a project with a Bicycle or Pedestrian component as well as a project with a Safety component.

## Total Bicycle and Pedestrian Expenditures

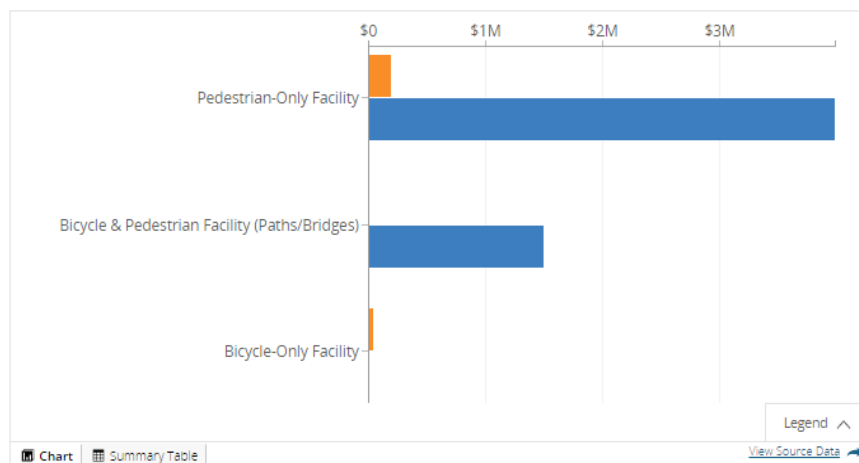


## Federal-Aid Project Expenditures



**Notes:** In accordance with state law, the HDOT discloses federal expenditures on state and county bikeways in the Act 222 Report. To view past reports: <https://hidot.hawaii.gov/library/reports/reports-to-the-legislature/>. To view recent annual federal-aid project expenditures: <https://highways.hidot.hawaii.gov/stories/s/Bicycle-Planning/v4zn-nbn4#performance-measure-federal-expenditures-on-bikeways>

## State-Only Project Expenditures



# Work Completed To Address Bicycle and Pedestrian Integration on Hawaii Highways

As a result of the Bicycle and Pedestrian projects worked on by HDOT Highways in Calendar Year 2021, the following improvements were made:

## Bicycle Facilities

HDOT has more than **157 bikeway miles** on the state HDOT network. HDOT added **54.8 miles** to the bikeway network since 2003 (53% increase). HDOT has **more than 30 miles** of new bikeways in project delivery, which are estimated to be complete in 2022 and 2023.

| Bicycle Improvements                     | 2003  | 2013  | 2020   | New Bikeways In Proj... |
|--|-------|-------|--------|-------------------------|
| STATEWIDE PATHS                          | 11.3  | 19.9  | 19.9   | 4.7                     |
| STATEWIDE BIKE LANES                     | 17.2  | 20.4  | 20.4   | 5.2                     |
| STATEWIDE SHARED ROUTE SHOULDER BIKEWAYS | 74.2  | 111.9 | 117.22 | 20.54                   |
| STATEWIDE TOTAL BIKEWAYS                 | 102.7 | 152.2 | 157.5  | 30.44                   |

1 to 4 of 4



## Pedestrian Facilities

HDOT has more than **160 miles** of sidewalks on the state HDOT network. **Eight miles** were added to the network in 2020, which is a **5 percent increase** over the previous year's miles.

**\*NOTE:** The sidewalk and crosswalk data is derived from the LiDAR data which is available in the spring of each year. Therefore, the pedestrian infrastructure data for each year is not available until the following spring. Four raised crosswalks on O'ahu are planned to be installed by the end of 2021, which are included in the number above.

| Pedestrian Improvements           | 2019  | 2020   | 2021* |
|-----------------------------------|-------|--------|-------|
| SIDEWALK MILES (CENTERLINE-STATE) | 152.6 | 160.67 |       |
| CROSSWALKS (STATE)                | 2,052 |        |       |
| RAISED CROSSWALKS (STATE)         | 9     | 12     | 28    |

1 to 3 of 3

## Raised Crosswalks: A Story to Improve Safety

The raised crosswalks installed by the HDOT have been successful at improving pedestrian safety and decreasing speeding. The HDOT installed **28 raised crosswalks** since 2019, most of which were installed in 2021. **Ninety-three percent** of the raised crosswalks are within 1 mile of a school. There have been **zero pedestrian fatalities or crashes** at these locations since installation. Initial speed analysis demonstrates a potential decrease in speeding up to 50 percent.



**Raised Crosswalks (Statewide):** Raised crosswalks are a safety treatment included in the Federal Highway Administration's "Safe Transportation for Every Pedestrian" program. Raised crosswalks are an effective safety treatment to decrease pedestrian crashes at uncontrolled crossings. Raised crosswalks can help address issues such as conflicts at crossing locations, excessive vehicle speeds, drivers not yielding to pedestrians in crosswalks, and pedestrian visibility.

### Number of Installed Raised Crosswalks by Island:

- **Oahu:** 15 (4 more in design for the end of 2021)
- **Hawaii:** 5
- **Maui:** 3 (1 installed in 2022-23)
- **Kauai:** 1 (in development)

## Featured Active Projects that Address Bicycle and Pedestrian Integration:

- **Ala Moana Boulevard Elevated Pedestrian Walkway (Oahu):** The proposed safety project involves building a mauka-makai oriented “land bridge” that would link to paths on either side of Ala Moana Boulevard. Mauka of Ala Moana Boulevard, Victoria Ward Limited (VWL) is developing a 60-acre master planned Ward Village, which will create at least 4,500 new residential condominiums. Within a 10-minute walking distance, the nearby future Kakaako Rail Transit Station is expected to host about 2,650 pedestrians and cyclists each day once it realizes its full potential. The proposed elevated walkway would safely connect pedestrians and bicyclists generated by these future developments to Kewalo Basin, Kakaako Waterfront Park, and Ala Moana Beach Park. The project has been awarded a \$20 Million BUILD grant from the Federal Highway Administration, and is a partnership between HDOT and VWL. This project is estimated to begin construction in 2022. This project is shown on the [HDOT Highways Program Status - Future Projects Map](#).
- **Leeward Bikeway (Oahu):** The new shared use path is connecting with the existing Pearl Harbor Historic Trail and the West Loch path to create a dedicated bicycle and pedestrian pathway. The Leeward Bikeway project includes a new shared use path and bridges from Waipahu Depot Street to Philippine Sea Road in Ewa within the former OR&L right-of-way. The project is in construction and is planned to be completed by the end of 2022. The Leeward Bikeway project is shown on the [HDOT Highways Program Status - Current Construction Map](#).
- **Kamehameha Highway and Kahekili Highway Roundabout (Oahu):** This project proposes a shared use path along the roundabout at the intersection of Kamehameha Highway and Kahekili Highway, which includes pedestrian crosswalks that bicyclists can use to safely move through this intersection. The estimated total cost of the roundabout project is \$5,468,723, which includes the roundabout reconfiguration of the intersection, bike/pedestrian paths, crosswalks, curb ramps, striping and signs. This project is in the design phase and is estimated to begin construction in 2022. This project is shown on the [HDOT Highways Program Status - Future Projects Map](#).
- **Walk Wise Hawaii (Statewide):** A pedestrian safety educational outreach campaign with an on-going focus on education with seniors, who are disproportionately represented in fatal pedestrian crashes. Walk Wise Hawaii has an active school outreach program that includes campus presentations at elementary, middle, high school and universities around the state. Walk Wise Hawaii’s outreach also includes driver awareness of pedestrians through the distribution and presentations using the Drive Wise Hawaii brochure.

# Action Plan For Achieving Objectives

## Bike Plan Hawaii Actions

Bike Plan Hawaii Refresh: In 2020, the Highways Division began the process of refreshing the data, cost estimates, feasibility, and prioritization for all HDOT projects in the 2003 *Bike Plan Hawaii*. The primary objective of this process is to maintain current data for these projects and to identify priority and highly feasible projects on each island for implementation.

### Next steps:

- Gather public and technical stakeholder priorities on bikeway corridors: Fall/Winter 2021
- Finish prioritization process: Winter 2021
- Finalize Bike Plan Hawaii Refresh: Spring 2021
- Provide updated project information on the new Bicycle Planning web page: <https://highways.hidot.hawaii.gov/stories/s/Bicycle-Planning/v4zn-nbn4>
- Continue to Invest in improvements to address needs in the bicycle network

## Statewide Pedestrian Master Plan Actions

- Continue to invest in improvements to address priority needs identified by the Statewide Pedestrian Master Plan process
- Ensure pedestrian related data and information shared meets Act 125, Session Laws of Hawaii, 2021  
<https://highways.hidot.hawaii.gov/stories/s/Pedestrian-Planning/a6mu-vr5z>

## Program Actions

- Project delivery: Continue to identify opportunities to implement bicycle and pedestrian improvements in larger Highways Division projects.
- Coordination: Continue to coordinate with bicycle and pedestrian stakeholder groups statewide.
- Data: Continue to identify gaps in data (and ways to resolve them) to inform the bicycle and pedestrian program, identify needs in the bicycle and pedestrian network, and accurately measure performance
- Transparency: Continue to provide data, maps, plans, and information about the Bicycle and Pedestrian Program on dedicated web pages: <https://highways.hidot.hawaii.gov/stories/s/h4ss-c6xy>
- Consistent with Bike Plan Hawaii and the Statewide Pedestrian Master Plan process, identify and analyze recommendations to provide protected bicycle and pedestrian facilities that benefit people living in public housing or Hawaiian Home Lands, to meet the requirements of SCR 173, Session Laws of Hawaii, 2021.

## Future Projects Involving Bicycle and Pedestrian Components

This list includes projects from the Statewide Planning Document (STIP) that have money allocated to the project in the next two federal fiscal years.

[Click here](#) for a more detailed explanation of how these projects were identified.

**NOTE:** Projects below may be listed in multiple categories because they fulfill certain criteria for other categories.

| PSS_ID  | Category | house_district | senate_district | District  | State_OR_County | P |
|---------|----------|----------------|-----------------|-----------|-----------------|---|
| S11-22  | Enhance  | 42             | 20              | Statewide | State           | P |
| S11-22  | Enhance  | 42             | 20              | Statewide | State           | P |
| S11-22  | Enhance  | 42             | 20              | Statewide | State           | P |
| S11-22  | Enhance  | 42             | 20              | Statewide | State           | P |
| S11-22  | Enhance  | 42             | 20              | Statewide | State           | P |
| S11-22  | Enhance  | 42             | 20              | Statewide | State           | P |
| MC21-22 | Transit  |                |                 | Maui      | County          | B |

1 to 7 of 52

## Bicycle and Pedestrian Program

### [Bike Plan Hawaii](#)

The primary goal of Bike Plan Hawaii is to establish bicycling as a safe and convenient mode of transportation for residents and visitors throughout the state by creating a network of bicycle facilities on our system. The Highways Division is in the process of updating data and reevaluating priorities, costs, and feasibility of proposed projects from the 2003 Bike Plan Hawaii. In 2020, the Highways Division focused on reviewing existing data, as well as organizing regular coordinating meetings with the primary bicycle advocacy organization in each District. In 2021, the Highways Division developed online maps for the existing bikeways and future proposed bikeways. Prior to this effort, the Highways Division completed an implementation effort in 2012 that completed preliminary engineering work in the form of project assessment reports for high priority projects on each island.

### [Statewide Pedestrian Master Plan](#)

The Statewide Pedestrian Master Plan provides a comprehensive strategy to improve pedestrian safety, mobility, and accessibility on the State Highway System. The plan identifies and recommends improvements for 31 areas of concern statewide. Fifty percent of the top 10 projects are complete. The Highways Division developed an online map of the projects in the Statewide Pedestrian Master Plan.



## Safety Projects

Facilities that improve bicycle and pedestrian safety

### Bike Plan Hawaii

- Number of Improvements: 127
- Percentage of Improvements: 93%
- Estimated Cost: \$2,360,894,579
- In Project Delivery (2020-2022): 11 Projects

### Statewide Pedestrian Master Plan

- Number of Improvements: 21
- Percentage of Improvements: 68%
- Estimated Cost: \$28,405,000
- Complete, Partially Complete, or in Project Delivery (since 2013): 14 Projects (67%)

## Connectivity Projects

Facilities that improve network connectivity by filling gaps in the network.

### Bike Plan Hawaii

- Number of Improvements: 87
- Percentage of Improvements: 64%
- Estimated Cost: \$1,408,558,563
- In Project Delivery (2020-2022): 9 Projects

### Statewide Pedestrian Master Plan

- Number of Improvements: 15
- Percentage of Improvements: 48%
- Estimated Cost: \$36,553,000
- Complete, Partially Complete, or in Project Delivery: 7 Projects (47%)

## Accessibility Projects

Facilities that improve access to places such as transit, schools, parks, beaches, commercial districts, etc.

### Bike Plan Hawaii

- Number of Improvements: 133
- Percentage of Improvements: 98%
- Estimated Cost: \$2,567,241,444
- In Project Delivery (2020-2022): 10 Projects

### Statewide Pedestrian Master Plan

- Number of Improvements: 30
- Percentage of Improvements: 97%
- Estimated Cost: \$36,553,000
- Complete, Partially Complete, or in Project Delivery: 17 Projects (57%)



## Overview

Projects that address economic vitality provide infrastructure, operations improvements, and technology to optimize traffic flow, reduce travel times, address recurring and non-recurring events/incidents that cause congestion, and provide new and/or additional capacity for all modes of transportation.

Specific projects that address economic vitality fall under the congestion and capacity programs and include the freeway management system, intersection operations improvements, traffic signal optimization, traffic signal upgrades, Intelligent Transportation Systems, new roadways, and expanding existing roadways; drainage improvements; shoulder and bike lane improvements

## Objectives

### Objective 1: Improve travel time reliability for trucks

**NOTE:** There is often a lag between the projects currently being planned and the impact on performance measures. Progress that the organization is seeing now is based on work completed in previous years. [Click here](#) to download a graphic that shows the performance feedback loop.

## Measure Performance

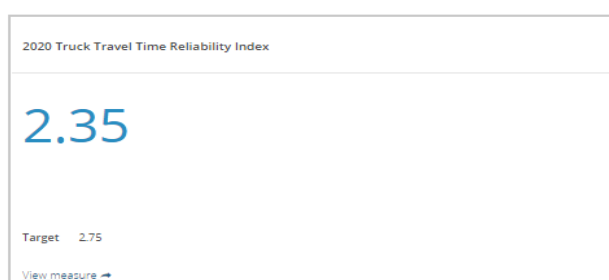
### 2020 Truck Travel Time Reliability (TTTR) Index

**What Is Truck Travel Time Reliability:** This metric is intended to measure how consistent or dependable travel times are for freight vehicles. The TTTR ratio is generated for each segment by dividing the 95th percentile time (slow conditions) by the normal time (50th percentile). The TTTR Index will be generated by multiplying each segment's largest ratio of the five periods by its length, then dividing the sum of all length-weighted segments by the total length of Interstate.

A lower TTTR indicates that there is a lower level of travel time variability (i.e., more reliable travel times).

**Why is this measure important:** Shipper, freight carriers, and businesses require predictable travel times to optimize resource planning, deliver on contracts and remain competitive in the marketplace. Delays cost money.

**NOTE:** The metric below is from 2020 HPMS reliability data. This is the most up-to-date data available to Highways at this time.



### Estimate of New Jobs Supported in CY 2021

The measure below is an estimate of new jobs supported based on construction projects that began during the fiscal year.

**Why is this measure important:** maximizing the employment of Hawaii's residents is vital to a sustainable and healthy economy for the State of Hawaii.

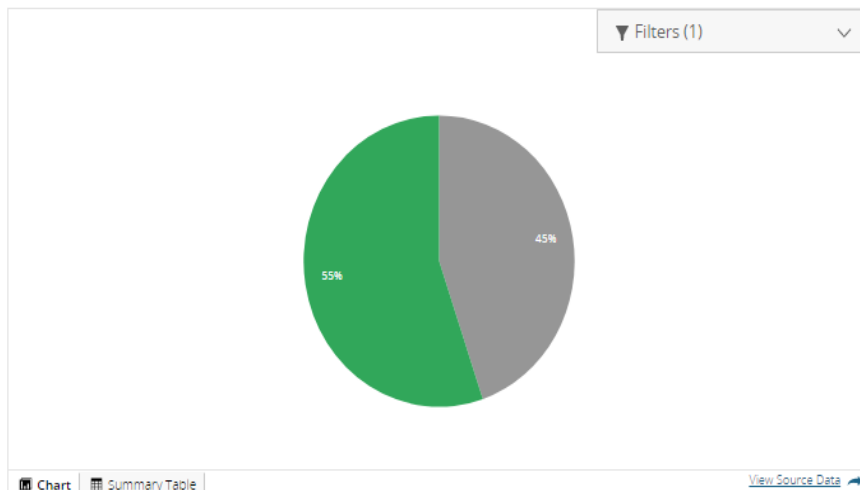
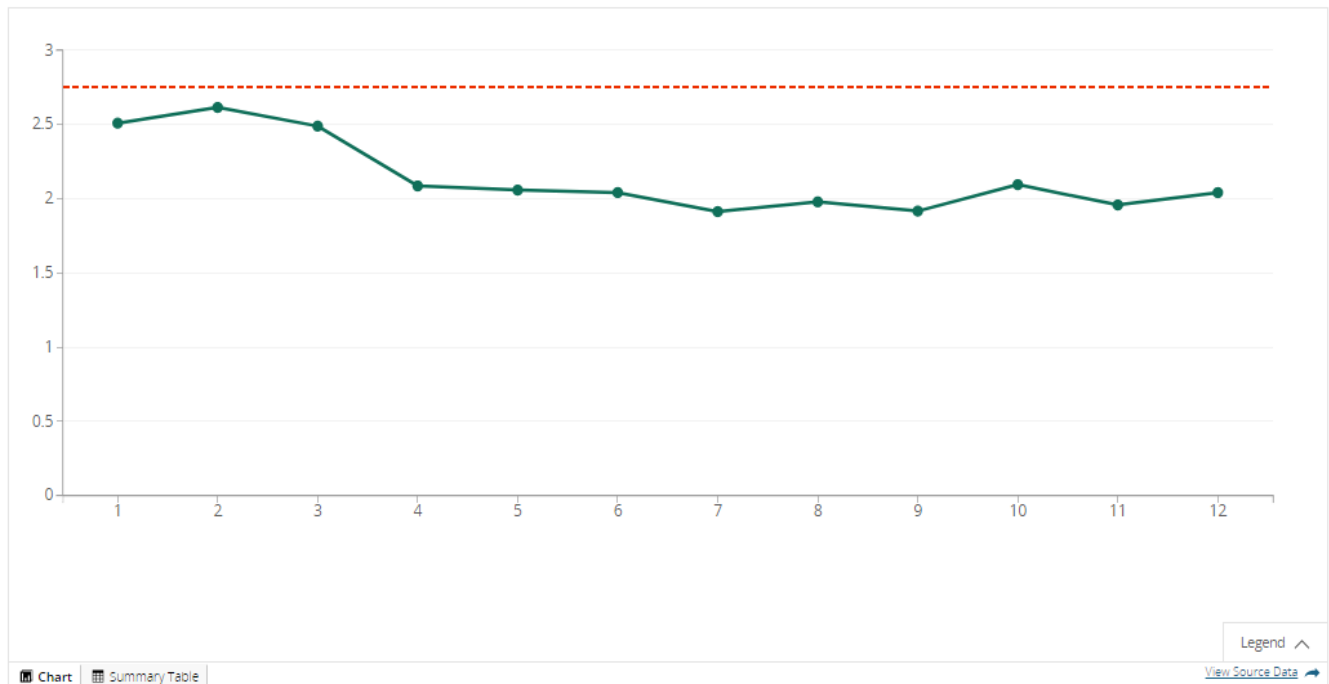
For more details on how this measure is determined, click [here](#).



## Unofficial Truck Travel Time Reliability (TTTR) Index by Month

The chart below uses the most up-to-date (unofficial) data to calculate the TTTR Index each month (Jan=1, Dec=12) by year (see legend). The red line indicates the 4-year goal established by FHWA.

**NOTE:** A lower TTTR indicates that there is a lower level of travel time variability (i.e, more reliable travel times).



### Percentage of Active Projects with Economic Vitality Component

The pie chart to the left provides the percentage of Active projects with a Economic Vitality component compared to the full list of active projects.

- The **GREEN** portion of the pie chart indicates the percentage of projects with an Economic Vitality component.
- The **GREY** portion of the pie chart indicates the percentage of projects without an Economic Vitality component

**NOTE:** Hover your mouse over the pieces of the pie chart to view the number of active projects



### Projects with Economic Vitality Component Started in CY2021

The number below reflects the number of projects involving Economic Vitality that began Construction in Calendar Year 2021.

Click [here](#) to view the list of projects



### Active Projects with Economic Vitality Component

The number below reflects the number of projects involving Economic Vitality that are currently active.

Click [here](#) to view the list of projects



### Completed Projects with Economic Vitality Component

The number below reflects the number of projects involving Economic Vitality that completed construction in Calendar Year 2021.

Click [here](#) to view the list of projects



**NOTE:** The projects included in the counts and pie chart above are powered by data in the Project Status System (PSS) and the presence of data gaps may mean these numbers are underreporting the true number of projects.

**NOTE:** For documentation as to how these metrics were calculated, please click [here](#).

**NOTE:** One project can have multiple components depending on the scope of work. For example, an Economic Vitality project can also contribute to improving System Preservation. This means that a project would be counted as a project with a Economic Vitality component as well as a project with a System Preservation component.

## Work Completed To Enhance Economic Vitality Through Hawaii Highways Projects

### Encouraging and enabling access to Kapolei, Oahu's Second City

HDOT performing work that promotes and enables economic growth in Kapolei accomplishes multiple objectives. Infrastructure work that increases the accessibility to Kapolei allows people from all over the island of Oahu to travel to Kapolei to work, shop and live at the businesses and residential communities that are established there. That means that the entrepreneurs and business owners in Kapolei see a direct benefit of any work that HDOT performs to increase accessibility to The Second City.

In addition to economic opportunities, the growth of Kapolei as the Second City means that congestion into Honolulu will be reduced. As more businesses set up shop in Kapolei, not as many people living in that area have to commute into Honolulu for work, shopping or other activities. This decrease in volume on the Highways system into Honolulu will improve the travel time reliability and reduce some of the wear and tear on the Highways system due to increased volume.

#### Project Highlight: Kapolei Interchange Phase 2:

On the westside of Oahu the Kapolei Interchange Phase 2 is open with additional accesses to the Interstate H-1. This project provides efficiency for travelers both on the Interstate and in the Kapolei sub-area.

The department has implemented teleworking for its employees during the pandemic and will continue this policy after. The provision of providing another method of working has provided efficiency in work performance and decreased congestion levels on the roads.

### Other Accomplishments

HDOT has increased the coverage of their Freeway Service Patrol (FSP)

- **14% increase in coverage for the FSP** - HDOT expanded the coverage area for the Hawaii Freeway Service Patrol (FSP) to the West Oahu community of Kapolei

# Action Plan For Achieving Objectives

Economic vitality is also guided by the Highways Division's Freight Plan. The Freight Plan identifies Hawaii's National Highway Freight Network, freight needs and trends, existing condition and performance of the freight network, and high priority strategies and projects for implementation.

Economic Vitality is also guided by and improved through the capacity and congestion programs.

## Future Projects Involving Economic Vitality Component

This list includes projects from the Statewide Planning Document (STIP) that have money allocated to the project in the next two federal fiscal years.

[Click here](#) for a more detailed explanation on how these projects were identified.

**NOTE:** Projects below may be listed in multiple categories because they fulfill certain criteria for other categories.

| PSS_ID  | Category | house_district | senate_district | District  | State_OR_County | PROJECT                       | Revision_Date |
|---------|----------|----------------|-----------------|-----------|-----------------|-------------------------------|---------------|
| HS14-22 | Congest  | 2, 1           | 1               | Hawaii    | State           | Hilo Bayfront Highway, I...   | 11/23/2021    |
| S11-19  | Enhance  | 37             | 18              | Statewide | State           | SNIPP - Statewide Noxio...    | 11/23/2021    |
| S11-19  | Enhance  | 37             | 18              | Statewide | State           | SNIPP - Statewide Noxio...    | 11/23/2021    |
| KS11-22 | Congest  | 14             | 8               | Kauai     | State           | Kuhio Highway (Route 5...     | 11/23/2021    |
| KS11-22 | Congest  | 14             | 8               | Kauai     | State           | Kuhio Highway (Route 5...     | 11/23/2021    |
| S11-22  | Enhance  | 42             | 20              | Statewide | State           | Pedestrian Facilities and ... | 11/23/2021    |
| S11-22  | Enhance  | 42             | 20              | Statewide | State           | Pedestrian Facilities and ... | 11/23/2021    |

## Accomplishments

### Truck Travel Time Reliability

For the improvement of Truck Travel Time Reliability Index target for 2020 was achieved. Measures on new jobs along with projects supporting economic are available in the section.

Additionally, in 2020 HDOT has moved forward with the procurement in expanding the Freeway Service Patrol operations to improve travel time reliability. The following provides the proposed expansion. This caption is from the 2020 America Transportation Awards, which this project received the category award for Quality of Life/ Community Development.

# 2020 America's Transportation Awards Nomination

## Category: Quality of Life/Community Development

### Hawaii Department of Transportation (HDOT) Freeway Service Patrol (FSP) Expansion into the Community of Kapolei

Recently, the Hawaii Department of Transportation (HDOT) expanded the coverage area for the Hawaii Freeway Service Patrol (FSP) to the West Oahu community of Kapolei. The Hawaii FSP program provides free emergency roadside assistance to motorists who are stranded on the H-1, H-2, H-201 Moanalua Freeways. These services help keep freeways clear, preventing traffic backups and reducing the risk of secondary crashes caused by traffic congestion.

Kapolei, commonly referred to as Oahu's "Second City", has seen a tremendous population growth in the last 30 years with the increase in government services, schools and businesses. The education system has grown in the area with Kapolei elementary, middle, and high schools, the University of Hawaii West Oahu Campus as a four-year full-service campus, and several private schools. Tourism and businesses have also grown in the area with Ko Olina, including the Aulani Disney resort; The Four Seasons Resort Oahu; Marriott's Ko Olina Beach Club; and the Beach Villas at Ko Olina; and a new shopping mall, Ka Makana Ali'i.

This tremendous growth has resulted in an increase in traffic congestion during peak times. Further, during morning peak period motorists are allowed to use the shoulders as travel lanes to increase capacity. The use of the shoulders eliminates an area for vehicles to pull over in the event of a mechanical breakdown or motor vehicle collision. To increase the safety of its citizens, HDOT expanded FSP into the community of Kapolei to quickly respond and clear any vehicles from lanes of travel.

HDOT FSP responds to approximately 8,800 events per year that involve a traffic incident, removing motorists from the travel lanes of traffic or providing on-scene motorists assistance to citizens that have a flat tire, dead battery or run out of gas. Since the FSP team may be the first to respond, operators are trained in first-aid, CPR, fire extinguishing and recognizing hazardous materials.

With the expansion of FSP into West Oahu, HDOT has increased its coverage by **14%**. The presence of FSP in the "Second City" has significantly benefited the community in increased safety and reduced congestion.

#### Testimonials:

*"I have known about the Hawaii Freeway Service Patrol for about 10 years and experienced firsthand the outstanding work that they do providing free motorist assistance. I was delighted to learn about the Freeway Service Patrol expanding their coverage from Kunia out to Kapolei! Living in Kapolei and making the daily commute to town, I have already witnessed them clearing out stalled vehicles in the morning traffic. Thank you to the Hawaii Freeway Service Patrol!"* Vanessa Sanchez

*"The [HDOT FSP Operator] helping us is really helpful. That was the first time I was stranded on the freeway. Thanks much".* Motorist Jane



## Overview

Projects that address resiliency improve our ability to adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions. This includes responding to risk or vulnerabilities in our transportation system related to extreme weather/natural disasters, emergency events or non-recurring incidents, and sea level rise.

Specific projects that address resiliency fall primarily under the safety and system preservations programs and include rockfall and slope stabilization, routine maintenance, landscaping, and shoreline erosion, drainage, bridge, and pavement improvements; guardrail and shoulder improvements; traffic signal modernization; highway lighting improvements, signage improvements; bike and pedestrian improvements

## Objectives

This effort is guided by the [Highway's Climate Adaptation Action Plan](#) that outlines strategies and actions to incorporate resilience into programs, and policies; and identifies locations along the state highways that are exposed to natural hazards. The climate hazard exposure assessments of state highway assets include: rockfall and landslides, sea level rise, coastal erosion, storm surge, tsunami, wildfire and lava flow and can be viewed on our [online web-map viewer](#). Using these tools each Highway's Division branch shall implement resilience activities, undertake resilience research and create a knowledge base of guidance and best practices for resilience in their respective programs.

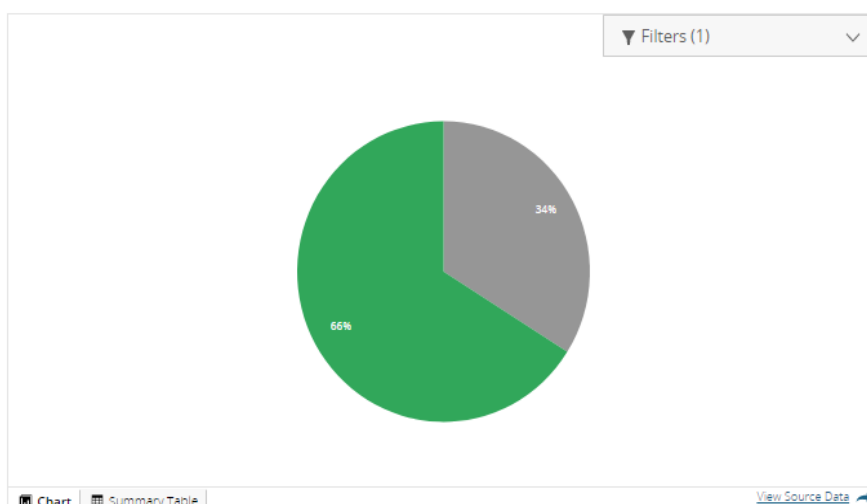
The following provides an overview of the Highway's Division Resilience Objectives:

### Objective 1: Improve Resiliency by Incorporating Design Adaptation Strategies

### Objective 2: Increase Redundancy in the Transportation System

**NOTE:** There is often a lag between the projects currently being planned and the impact on performance measures. Progress that the organization is seeing now is based on work completed in previous years. [Click here](#) to download a graphic that shows the performance feedback loop.

## Measuring Performance



### Percentage of Active Projects with Resiliency Component

The pie chart to the left provides the percentage of Active projects with a System Efficiency component compared to the full list of active projects.

- The **GREEN** portion of the pie chart indicates the percentage of projects with a Resiliency component.
- The **GREY** portion of the pie chart indicates the percentage of projects without a Resiliency component

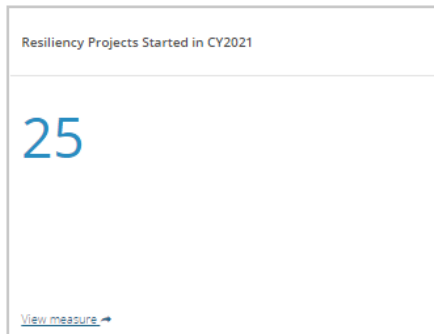
**NOTE:** Hover your mouse over the pieces of the pie chart to view the number of active projects



### Projects with Resiliency Component Started in CY2021

The number below reflects the number of projects involving Resiliency that began construction in Calendar Year 2021

Click [here](#) to view a list of these projects



### Active Projects with Resiliency Component

The number below reflects the number of projects involving Resiliency that are currently active.

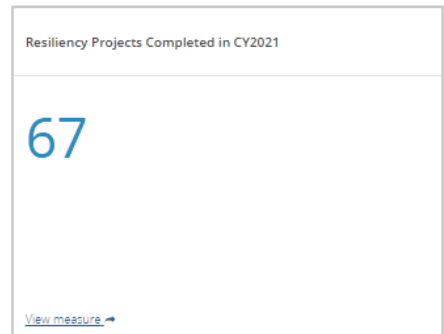
Click [here](#) to view a list of these projects



### Projects with Resiliency Component Completed in CY2021

The number below reflects the number of projects with a resiliency component that completed construction in Calendar Year 2021.

Click [here](#) to view a list of these projects



**NOTE:** The projects included in the counts and pie chart above are powered by data in the Project Status System (PSS) and the presence of data gaps may mean these numbers are underreporting the true number of projects.

**NOTE:** For documentation as to how these metrics were calculated, please click [here](#).

**NOTE:** One project can have multiple components depending on the scope of work. For example, a Resiliency project can also contribute to improving System Preservation. This means that a project would be counted as a project with a Resiliency component as well as a project with a System Preservation component.

## Work HDOT Is Performing to Proactively Reduce Impact on the Environment

Based on the resiliency policies set forth by The Department, HDOT is institutionalizing climate mitigation efforts to reduce greenhouse gas emissions such as:

- 1. Greening our operations** with initiatives such as injecting carbon dioxide into the concrete using CO2 mineralization technology (i.e. [CarbonCure technology](#)). The resulting product converts carbon dioxide in mineral form within the concrete and improves the comprehensive strength of the material while requiring less cement in the concrete or CO2 avoided. HDOT is also using asphalt mixes with polymer-modified (PMA) to increase service life by improving rutting and cracking resistance. In addition to using PMA in their standard dense graded mixtures, HDOT is using stone matrix asphalt (SMA) in high-volume traffic areas. SMA is a gap graded mixture that uses stone-on-stone contact to provide even more durability and rut resistance. Also, with the majority (approx. 85% of NHS) of our roads Asphalt Concrete (AC), we are piloting a project using two recycled plastic pavement technology companies that have better performance (stiffer, more crack resistance) than regular HMA and reduce impacts of both our plastic crisis and carbon footprint.
- 2. Broadband efforts to reduce traffic and connect communities.** And encouraging the use of active transportation modes. This includes supporting existing DOT lead projects such as the [Ala Moana Elevated Walkway](#), and the actions included in the [Statewide Pedestrian Master Plan](#), and the [Bike Plan Hawaii](#) Refresh. HDOT Highways also supports active transportation projects through its [Transportation Alternatives Program](#).
- 3. Investing in electric vehicle fleets.** In 2021 the Highway's Division invested in **43 vehicles** and **43 charging stations** with the goal of converting the remaining **250 light vehicles** in the Department to electric vehicles. This HIEPRO contract was put together to help the State DOT convert to Electric Vehicles and allowed us to quickly deploy charging stations and put them in areas the public can access so that folks in the community can also leverage them. In addition, the [EV service contract](#) helped the State DOT convert to Electric Vehicles and allowed us to quickly deploy charging stations in areas that the public can also access.
- 4. Encouraging the use of active transportation modes.** This includes supporting existing DOT lead projects such as the [Ala Moana Elevated Walkway](#), and the actions included in the [Statewide Pedestrian Master Plan](#), and the [Bike Plan Hawaii](#) Refresh. HDOT Highways also supports active transportation projects through its [Transportation Alternatives Program](#).

## SPOTLIGHT: HDOT Works To Expand Electric Vehicle Fleet To Combat Climate Change and Enhance Resiliency of Highways System

HDOT obtained a service contract to replace light duty vehicles in its fleet with electric vehicles (EVs). The contract allows HDOT and other state and county agencies to obtain EVs and charging infrastructure as a service on a per mile cost basis, reducing the upfront costs of electrifying fleet vehicles and reducing fuel and maintenance costs.

The state-wide Hawaii fleet electrification contract (RFP-20-001-HWYS) is now active. This contract allows all participating agencies and departments to obtain electric vehicles and all related charging infrastructure in exchange for usage fees.

This contract is a cost effective way to begin conversions of your vehicle fleet to zero emissions without upfront capital costs. The contract is available for all types of vehicles, light duty and buses to heavy equipment, as long as the technology is available on the market. The contract is also open to all makes and models available on the market.

Sustainability Partners (SP), the awarded contractor, will help you work through the process and answer any questions. SP initiates new orders for vehicles and charging infrastructure on a recurring basis. Groups interested in learning more and/or considering participation in the next order should make a request here: <https://www.sustainability.partners/hawaii/>



## Work that HDOT Is Performing to Improve the Resiliency of the Highways System In Response to Climate Change

HDOT communicated its commitment to resilience in its [Highway's Climate Adaptation Action Plan](#) that outlines strategies to be implemented and actions to standardize and better incorporate resilience into our programs and policies.

HDOT built on the [2019 Shoreline Study](#) that identifies priority state roads for erosion control/ shoreline remediation based on the Coastal Road Erosion Sustainability Index (CREST) and developed exposure assessments in the Climate Adaptation Action Plan. The climate hazard exposure assessments of state highway assets include: rockfall and landslides, sea level rise, coastal erosion, storm surge, tsunamis, wildfire and lava flow and can be viewed on our [online web-map viewer](#).

HDOT also established a Highway's Division Resilience Policy that focuses on adjusting the Division's internal practices to ensure that all decisions include future-oriented designs and cost-effective investments that lead to a more resilient highway system. This Policy applies to all operations and branches as resilience is a cross functional discipline that should be engrained in the project prioritization and project delivery process as a part of everyone's job, like safety.

The directive requires standardizing current resilience adaptation efforts such as:

1. Following an adaptive design process for projects exposed to climate-related hazards – examples include the Waipa, Waikoko, and Waioli bridge repair project on Kauai to withstand a tsunami hazard; and the [Makaha Bridges 3A and 3B projects](#) that are using less costly, more immediate fixes as these facilities are in areas that are impacted by SLR.
2. Considering both minor and major adaptations. For example, [Laniakea is a small realignment project](#) that is currently in the environmental review phase and provides additional time to plan and coordinate while moving the threatened segment. [Honoapiilani Highway in Olowalu](#) is also a planned realignment project that is in the environmental review phase and assesses managed retreat options.
3. Integrating resilient infrastructure into Emergency Relief programs funded projects so that following a disaster the repairs may improve the long-term resilience of highway assets. For example, we repair the ER projects in anticipation of future climate change events like our Pali tunnel canopy to address future rockfall events.



*Left: view from the top of the Hanalei landslide restoration project.*



*Right: bird's eye view of the Hanalei landslide restoration project.*



# Action Plan For Achieving Objectives

Resiliency will be guided by the [Climate Hazards Highways Action Plan](#). This plan evaluates and addresses the impacts of climate change, extreme weather events, and other hazards. It includes broad exposures assessments on static GIS maps of the following hazards: rockfalls and landslides, inland floods, wildfires, coastal inundation due to sea-level rise, storm surges, tsunamis.

## Action: Resilience Opportunity Project Checklist

HDOT created a checklist ([click here to download](#)) for project managers to ensure resilience efforts are considered in every current project moving forward. This includes considering the Highway's Climate Adaptation Action Plan Exposure Assessments and other vulnerability studies to assess whether alternative design, materials, or additional resilience and coordination efforts are warranted and determining priority projects to add resilience measures. The branches are to report on how many projects completed this process and were altered as a result.

## Action: Adaptive Design Guidance Document

HDOT will develop a playbook for adding resiliency features during project designs for new assets and repairs to existing assets for projects exposed to climate-related hazards. The goal is to provide staff with guidance on how new analysis/design approaches, use of data, and design strategies are considered in projects exposed to climate-related hazards. The Adaptation Decision-making Assessment Process (ADAP) and other similar processes will be used to establish the types of projects and types of adaptive designs that should be used.

## Action: Strengthen Data-Driven Efforts and Mapping Tools

The Exposure Assessments document contains a preliminary identification of climate-related hazards to the highway network. These studies provide the foundation for future work focused on understanding probable consequences and determining the socioeconomic impacts of probable climate-related hazard events. Further action is required to provide more definition to the risks and assets. HDOT will work to update its climate hazards web-map viewer with additional land use and population census data. This work will also include identifying methods to regularly incorporating the updated and always-changing climate data.

## Action: Integrate Resilience into Asset Management Planning

The goal is to link the changing climate information to the lifecycle planning process that is an important aspect of highway's asset management. Life cycle planning is defined in as "a process to estimate the cost of managing an asset class, or asset sub-group over its whole life with consideration for minimizing cost while preserving or improving the condition." Federal regulation (23 CFR 515.5).

## Action: Pilot Projects Often and Build Upon Both Successes and Failures

In 2021 HDOT initiated a sandsaver pilot project to evaluate effectiveness of "sandsavers" for reduction of erosion rate and shoreline stabilization. The aim of the pilot is to deploy perforated coastal structures at five locations and include field monitoring to determine effectiveness. The cost is estimated at \$8.5 million. HDOT will continue to push this pilot project and look for other solutions to address the immediate climate risks to state highway assets.

## Action: Enhance Emergency Response and Recovery Decision Support Structure

Formalize procedures for HDOT staff during emergency situations. Highways has a good reputation for responding to disruptions and has established effective partnerships with emergency response agencies, and the counties. However, Emergency Response Plans are not readily available. These procedures should be formalized and available on our website.

## Action: Ensure that Maintenance and Inspection Databases are Structured Consistently

Standardize the collection of maintenance and inspection data to better understand the specifics and costs of past failure, identify highway assets that are at risk of future failures, and inform future projects, lifecycle costs, and system resilience measures. This recommendation includes tying the existing database on facilities repeatedly requiring repair and reconstruction due to emergency events found [here](#) to a more robust maintenance and inspection database that can be incorporated into the asset management process.

Investing in more user-friendly, modern technologies i.e., computer tablets for field inspection and maintenance to collect data more readily, and the use of more real-time monitors for shifting slopes will also be pursued.

## Future Projects Involving Resiliency Component

This list includes projects from the Statewide Planning Document (STIP) that have money allocated to the project in the next two federal fiscal years.

[Click here](#) for a more detailed explanation of how these projects were selected.

**NOTE:** Projects below may be listed in multiple categories because they fulfill certain criteria for other categories.

| PSS_ID  | Category | house_district     | senate_district | District | State_OR_County | P |
|---------|----------|--------------------|-----------------|----------|-----------------|---|
| OS01-19 | SysPres  | 47, 46, 45         | 23, 22          | Oahu     | State           | B |
| OS01-19 | SysPres  | 47                 | 23              | Oahu     | State           | B |
| OS01-19 | SysPres  | 33, 31, 50, 49, 48 | 14, 24, 25, 15  | Oahu     | State           | B |
| OS01-19 | SysPres  | 47                 | 23              | Oahu     | State           | B |
| MS11-19 | SysPres  | 9                  | 5               | Maui     | State           | B |
| HS01-19 | SysPres  | 6, 7               | 4               | Hawaii   | State           | B |
| OS01-19 | SysPres  | 43                 | 20              | Oahu     | State           | B |